





DOCUMENT CLASS ERS PAGE NO. 1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

TABLE OF CONTENTS		PAGE
1.0	SCOPE	1-1
2.0	APPLICABLE DOCUMENTS	2-1
3.0	GENERAL DESCRIPTION	3-1
3.1	MULTI-LEAVING Protocol Definitions	3-1
3.2	MULTI-LEAVING Protocol Operations Description	3-1
4.0	MULTI-LEAVING Block Descriptions	4-1
4.1	Control Blocks	4-1
4.1.1	Acknowledge Block	4-1
4.1.2	Negative Acknowledge Block	4-1
4.1.3	Inquiry Block	4-2
4.1.4	Idle Block	4-2
4.2	Data Block Control Bytes	4-2
4.2.1	BCB {Block Control Byte}	4-2
4.2.2	FCS {Function Control Sequence}	4-3
4.2.3	RCB {Record Control Byte}	4-4
4.2.4	SRCB {Sub-Record Control Byte}	4-4
4.2.5	SCB {String Control Byte}	4-6
4.3	Data Block Description	4-6
4.4	Short Block Descriptions	4-9
4.4.1	Operator Console Blocks	4-9
4.4.2	EOF Block	4-10
4.4.3	FCS Change Blocks	4-11
5.0	ERROR CONDITIONS	5-1
5.1	CRC-16 Error	5-1
5.2	Illegal Block Make-up Error	5-1
5.3	Unknown Response Error	5-1
5.4	Time-out Error	5-2
5.5	BCB Error	5-2
6.0	TERMINAL START-UP AND TERMINATION	6-1
6.1	Terminal Initialization	6-1
6.2	Communication Line Initialization	6-1
6.3	SIGN-ON Block	6-2
6.4	SIGN-OFF Block	6-2
7.0	MULTI-LEAVING Communications	7-1
8.0	GLOSSARY	8-1
APPENDICES		
APPENDIX A	- IBM 360/20 TERMINAL LISTING	A-1
APPENDIX B	- TERMINAL IMPLEMENTATION RECOMMENDATIONS	B-1
APPENDIX C	- EBCDIC TABLE	C-1
APPENDIX D	- ASCII TABLE	D-1



DOCUMENT CLASS ERS PAGE NO. 1-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## 1.0 SCOPE

The purpose of this document is to define a communication protocol which is known as MULTI-LEAVING. This protocol is used on IBM 360 and 370's when operating under HASP\* and when computer-to-computer communication is desired. The MULTI-LEAVING protocol provides the capability to transmit a variable number of data streams between two computers in a two-way alternate, synchronous transmission mode using either ASCII or EBCDIC code. Line speeds up to 50,000 bps are attainable with the MULTI-LEAVING protocol, and transmission can be in either a transparent or a non-transparent mode.

\* HASP operates on the OS/MFT/MVT operating system.

CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 2-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

2.0 APPLICABLE DOCUMENTS

The following documents provide a background which is useful in understanding the contents of this document:

IBM No. 6A27-3004-2, General Information - Binary Synchronous Communication

IBM No. C33-4001-4, IBM System/360 Model 20 Input/Output Control System for the Binary Synchronous Communications Adapter

IBM No. 360D-05.1.014 HASP II Manual

COPE.3X Simulation of IBM MULTI-LEAVING Remote Terminal {HASP}

DOCUMENT CLASS ERS PAGE NO. 3-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

### 3.0 GENERAL DESCRIPTION

#### 3.1 MULTI-LEAVING Protocol Definitions

The MULTI-LEAVING protocol consists of the bi-directional transmission of informational blocks between two or more computers in a transparent or a non-transparent mode. The informational blocks are defined to be the following types of blocks:

1. Control blocks
2. Data blocks

Control blocks contain control characters, control bytes, and data records. {Section 4.3} Control characters are defined in Section 4.1. Data records are character strings and their associated character string control bytes, SCB {Section 4.2.5}.

Each data record in the data block is associated with a specific peripheral device. In order to facilitate identification, a stream number and a device type are assigned to the data record via a record control byte, RCB {Section 4.2.3}. Each record control byte has a sub-record control byte, SRCB, associated with it to provide additional information about the data record {Section 4.2.4}.

A data block may consist of several data records, all of which may or may not be from the same device. In order to control the flow of data from or to any particular device, a function control sequence, FCS, is added to each data block {Section 4.2.2}.

To facilitate error detection, a block control byte, BCB, is added to each data block {Section 4.2.1}.

#### 3.2 MULTI-LEAVING Protocol Operations Description

The following narrative is a general description of how the MULTI-LEAVING protocol operates:

The terminal software is loaded {Section 6.1} and the communication line is initialized {Section 6.2}. After the SIGN-ON command is transmitted, the terminal and the central processor transmit idle blocks until a function is desired {Section 6.3}.

When a function other than a console message or console command {Section 4.4.1} is desired, the processor desiring to initiate the function transmits a request to initiate a function transmission RCB {Section 4.2.3}. The processor that receives the request to initiate a function transmission RCB, transmits a permission to initiate a function transmission RCB if the

## CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 3-2  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

data from the requesting processor can be processed. If the data cannot be processed, or if the function is now in process, the request to initiate a function transmission RCB is ignored.

When a permission to initiate a function transmission RCB is received, the requesting processor begins transmitting data blocks to the other processor. Data blocks can be transmitted until an EOF {End of File} is encountered, at which time a zero length record is transmitted {Section 4.4.2}. In order to transmit more data blocks, on the same device stream, the request to initiate a function transmission RCB sequence of events must be initiated again. If a request to initiate a function transmission RCB is not received before data blocks are received, the data blocks are ignored.

Data blocks are transmitted one block at a time. Before another block can be transmitted, the receiving processor must transmit a positive response. A positive response is an acknowledge control block or a data block.

Console functions {operator messages and operator commands} do not have to follow the request to initiate - permission to initiate sequence. A console function may be initiated anytime that the wait-a-bit bit in the FCS is not set.



DOCUMENT CLASS ERS PAGE NO. 4-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

#### 4.0 MULTI-LEAVING BLOCK DESCRIPTIONS

##### 4.1 Control Blocks

Four types of control blocks are used in the MULTI-LEAVING protocol. These control blocks are:

1. Acknowledge block
2. Negative block
3. Enquiry block
4. Idle block

A description of the blocks and the block usage are contained in the following subsections.

##### 4.1.1 Acknowledge Block {ACK}

The acknowledge block {ACK} consists of the following control characters:

SYN, SYN, SYN, DLE, ACK0, PAD

where SYN = synchronization control character

DLE = data link escape control character

ACK0 = affirmative acknowledgement control character

PAD = pad control character {all 1 bits}

The ACK block is transmitted to indicate that the previous block was received without error and no data is available for transmission.

##### 4.1.2 Negative Acknowledge Block {NAK}

The negative acknowledge block {NAK} consists of the following control characters:

SYN, SYN, SYN, NAK, PAD

where SYN = synchronization control character

NAK = negative acknowledgement control character

PAD = pad control character {all 1 bits}

The NAK block is transmitted to indicate that the previous block was received in error and retransmission is necessary.

NOTE: A NAK block is never transmitted as a response to a NAK block.

# CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 4-2  
 PRODUCT NAME HASP MULTI LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## 4.1.3 Enquiry Block

The enquiry block consists of the following control characters:

SYN, SYN, SYN, SOH, ENQ, PAD

where SYN = synchronization control character

SOH = start of header control character

ENQ = enquiry control character

PAD = pad control character {all 1 bits}

The enquiry block is transmitted to establish communications with HASP at the central processor. The enquiry block is only used at system loading time.

## 4.1.4 Idle Block

The idle block is an ACK block which is used to maintain communications and avoid an unprogrammed time-out when neither processor has any data to transmit. The idle block is transmitted at least every two seconds.

## 4.2 Data Block Control Bytes

The control bytes, that are referenced in Section 3 and are part of each data block, are described in the following subsections.

### 4.2.1 Block Control Byte {BCB}

The block control byte bit representation is as follows:

Bit no. 0 7

0XXXCCCC

where: 0 = 1 {must always be on}

XXX = 000 = Normal block

= 001 = Ignore sequence count

= 010 = Reset expected block sequence to CCCC\*

= 011 or 100 = Reserved

= 101 or 110 = Available for user modification

= 111 = Reserved for future expansion

CCCC = Modulo 16 block sequence count

\* Reset block count on first transmission {SIGN-ON, etc.}

DOCUMENT CLASS ERS PAGE NO. 4-3  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

#### 4.2.2 Function Control Sequence {FCS}

The function control sequence bit representation is as follows:

Bit No. 0        78        F  
           0SRRABCD0TRRWXYZ

where: 0 = 1 {Must always be on}

S = 1 = Suspend all stream transmissions {Wait-A-Bit}

= 0 = Normal state

Note - for the following bits

- a bit = 1 = continue function transmission

- a bit = 0 = suspend function transmission

T = Remote Console stream identifier

R = Reserved for future expansion

ABCDWXYZ = Various function stream identifiers\*

- \* These stream identifiers are oriented to the recipient.  
 For example: if the central processor sends an FCS to the terminal, then the ABCDWXYZ bits represent card reader function stream identifiers. The card reader function stream identifiers are assigned in the following order:

Card Reader No. 1 = A  
                   No. 2 = B  
                   No. 3 = C  
                   No. 4 = D  
                   No. 5 = W  
                   No. 6 = X  
                   No. 7 = Y  
                   No. 8 = Z

If the terminal sends an FCS to the central processor, then the ABCDWXYZ bits represent punch and printer function stream identifiers. The card punch and line printer function stream identifiers are assigned in the following order:

Printer No. 1 = A = Punch No. 8  
 Printer No. 2 = B = Punch No. 7  
 Printer No. 3 = C = Punch No. 6  
 Printer No. 4 = D = Punch No. 5  
 Printer No. 5 = W = Punch No. 4  
 Printer No. 6 = X = Punch No. 3  
 Printer No. 7 = Y = Punch No. 2  
 Printer No. 8 = Z = Punch No. 1

DOCUMENT CLASS ERS PAGE NO. 4-4  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

#### 4.2.3 Record Control Byte {RCB}

The record control byte bit representation is as follows:

Bit No. 0 7  
 0IIITTTT

where: 0 = 0 = End of transmission block {IIITTTT=0}  
 = 1 = All other RCB's  
 III = Stream identifier if TTTT ≠ 0  
 III = Control information if TTTT = 0 {control record}  
 = 000 = Reserved for future expansion  
 = 001 = Request to initiate a function transmission\*  
 = 010 = Permission to initiate a function transmission\*  
 = 011 and 100 = Reserved  
 = 101 = Available for local modification  
 = 110 = Bad BCB on last block received  
 = 111 = General Control Record {type indicated in SRCB}  
 TTTT = Record type identifier  
 = 0000 = Control record  
 = 0001 = Operator message display request  
 = 0010 = Operator command  
 = 0011 = Normal input record  
 = 0100 = Print record  
 = 0101 = Punch record  
 = 0110 = Data set record  
 = 0111 = Terminal message routing request  
 = 1000-1100 = Reserved for future expansion  
 = 1101-1111 = Available for local modification

\* The RCB for these functions is contained in the SRCB.

#### 4.2.4 Sub-Record Control Byte {SRCB}

The sub-record control byte bit representation is as follows:

Bit = 0 7  
 0SSSSSSS

where: 0 = 1 {Must always be on}  
 SSSSSSS = additional record information - dependant on record type

If record type is General Control Record:

SSSSSSS=1000001 = Initial terminal SIGN-ON

Other bit representations for General Control Records have been assigned but are not now implemented by IBM {APPENDIX B}.

DOCUMENT CLASS ERS PAGE NO. 4-5  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

If record type is Request or Permission to initiate a function transmission:

SSSSSSS = Stream identifier and record type identifier as described in RCB.

If record type is Bad BCB on last block received:

SSSSSSS = expect block count modulo 16-right justified.

If record type is Print record:

SSSSSSS = MCCCCC

where: M = 0 = Normal carriage control  
 = 1 = Reserved for future use  
 CCCCCC = Carriage control information  
 = 1000NN = Space immediately NN spaces  
 = 11NNNN = Skip immediately to channel NNNN  
 = 0000NN = Space NN lines after print  
 = 01NNNN = Skip to channel NNNN after print  
 = 000000 = Suppress space

If record type is Punch record:

SSSSSSS = MMBRRSS

where: SS = Punch stacker selection information  
 B = 0 = Normal EBCDIC card image  
 = 1 = Column binary card image {not now supported}  
 MM = 00 = SCB count units = 1  
 = 01 = SCB count units = 2 {not now supported}  
 = 10 = SCB count units = 4 {not now supported}  
 = 11 = Reserved  
 RR = Reserved for future expansion

If record type is Input record:

SSSSSSS = MMBRRRR

where: MM = 00 = SCB count units = 1  
 = 01 = SCB count units = 2 {not now supported}  
 = 10 = SCB count units = 4 {not now supported}  
 = 11 = Reserved  
 B = 0 = Normal EBCDIC card image  
 = 1 = Column binary card image {not now supported}  
 RRRR = Reserved for future expansion

If record type is Message routine record:

SSSSSSS = T

where: T = Remote system number {1 ≤ T ≤ 99}  
 = Remote system group {100 ≤ T ≤ 127}  
 = 0 = Broadcast to all remote systems

DOCUMENT CLASS ERS PAGE NO. 4-6  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

#### 4.2.5 String Control Byte {SCB}

The string control byte bit representation is as follows:

Bit No. 0 7  
0KTCCCCC

where: 0 = 0 = End of record {KTCCCCC=0}  
          = 1 = All other SCB's  
K = 0 = Duplicate character string  
      T = 0 = Duplicate character is a blank  
          = 1 = Duplicate character is a non-blank  
              {character follows SCB}  
          CCCC = Duplication count  
K = 1 = Non-duplicate character string  
TCCCCC = Character string length

If KTCCCCC = 0 and 0=1, SCB indicates record is continued in the next transmission block.

#### 4.3 Data Block Description

Data blocks consist of data records, the control bytes described in the previous sub-sections and the following test control characters:

SYN = synchronization control character  
DLE = data link escape control character  
SOH = start of header control character - used only if  
      non-transparent mode  
STX = start of test control character  
ETB = end of transmission block control character  
CRC-16 = cyclic redundancy checking control characters  
          {2 bytes}  
PAD = pad control character {all 1 bits}

A typical data transmission block is shown in Figure 4.3.1.

DOCUMENT CLASS ERS PAGE NO. 4-7  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

FIGURE 4.3.1 TYPICAL MULTI-LEAVING DATA TRANSMISSION BLOCK

SYN	- Synchronization Characters
SYN	- Synchronization Characters
SYN	- Synchronization Characters
DLE	- BSC Leader {SOH if no transparency feature}
STX	- BSC START-OF-TEXT
BCB	- Block Control Byte
FCS	- Function Control Sequence {2 bytes}
RCB	- Record Control Byte for record 1
SRCB	- Sub-Record Control Byte for record 1
SCB	- String Control Byte for record 1
DATA	- Character String
SCB	- String Control Byte for record 1
DATA	- Character String
SCB=0	- Terminating SCB for record 1
RCB	- RCB for record 2
SRCB	- SRCB for record 2
SCB	- SCB for record 2
DATA	- Character String
SCB=0	- Terminating SCB for record 2
RCB=0	- Transmission Block Terminator
DLE	- BSC Leader - {SYN if no transparency feature}
ETB	- BSC Ending Sequence
CRC-16	- Cyclic Redundancy Check Characters {2 bytes}
PAD	- All 1 Bits

# CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 4-8  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

The following examples are representative of the various record types. {It is assumed that all of the examples start with SYN, SYN, SYN, DLE, STX, or SOH and end with DLE, or SYN, ETB, CRC-16, PAD. DLE is used if transmission is in transparent mode.}

Example No. 1 - A request to initiate a transmission function for printer no. 2

BCB = 1000XXXX - Normal block - count = XXXX  
 FCS = 1000YYYY, 1100YYYY - Normal state, identifiers YYYY, YYYY  
 SRCB = 10100100 - Request to initiate a function transmission  
 RCB = 0 - Transmission block terminator

Example No. 2 - A permission to initiate a transmission function for card punch no. 1.

BCB  
 FCS  
 RCB = 10100000 - Permission to initiate a function transmission  
 SRCB = 10010101 - Card punch stream no. 1  
 RCB = 0 - Transmission block terminator

Example No. 3 - A card reader record from card reader no. 2.

Card record =  
 Column No. 1 5 10 15 23 29  
 LABEL AAAAAA EXAMPLE

BCB  
 FCS  
 RCB = 10100011 - Card reader stream no. 2  
 SRCB = 10000000 - SCB count unit no. 1, EBCDIC card image  
 SCB = 11000101 - Nonduplicate character string-length 5 characters  
 L - Data characters  
 A  
 B  
 E  
 L  
 SCB = 10000100 - Duplicate character string, blank - length 4 characters  
 SCB = 10100110 - Duplicate character string, non-blank - length 6 characters



DOCUMENT CLASS ERS PAGE NO. 4-9  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

A	- Duplicated character
SCB = 10000111	- Duplicate character string, blank - length 7 characters
SCB = 11000111	- Nonduplicate character string - length 7 characters
E	- Data characters
X	
A	
M	
P	
L	
E	
SCB = 10011111	- Duplicate character string, blank - length 31 characters
SCB = 10010100	- Duplicate character string, blank - length 20 characters
SCB = 0	- End of record
RCB = 0	- Transmission block terminator

#### 4.4 Short Block Descriptions

There are several blocks that appear to be data blocks but are really special case data blocks. These short blocks are:

- Operator console blocks
- End of file blocks
- FCS change blocks
- SIGN-ON blocks
- BCB error blocks

The SIGN-ON blocks are described in the Terminal Start-Up Section {6.0}, and BCB error blocks are described in the Error Conditions Section {5.0}.

##### 4.4.1 Operator Console Blocks

Blocks which contain operator console messages or commands are special in that no additional records are packed into the data block following a console record.

Example: Assume a card reader is reading cards and the operator keyes in a console command to the central processor. The data block contains the data cards read up to the point that the console record is available. From that point on, the data block looks as follows:

DOCUMENT CLASS ERS PAGE NO. 4-10  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

RCB = 10010010	- Operator command - stream no. 1
SRCB = 10000000	
SCB	- SCB describing console character string
DATA	- Data may be divided into many character strings
SCB = 00000000	- End of record
RCB = 00000000	- Transmission block terminator
DLE or SYN	- DLE if transparent mode
ETB	- End of block
CRC-16	- Cyclic redundancy check
PAD	- All 1 bits

A request to initiate a transmission function is not required to transmit console records. The only restriction is that the Wait-A-Bit is not set in the FCS.

#### 4.4.2 End of File Blocks {EOF}

Blocks which contain end of files are special in that no additional records from the same device stream are packed into the data block following an EOF. Data blocks which are terminated by an EOF contain a final record which is as follows: for card reader stream no. 1.

RCB = 10010011	- Card reader stream no. 1
SRCB = 10000000	- SCB count units = 1, EBCDIC card images
SCB = 00000000	- EOF
RCB = 00000000	- Transmission block terminator
DLE or SYN	- DLE if transparent mode
CRC-16	
PAD	

In order to transmit more records for a device stream that contained an EOF, the request to initiate a function transmission must be transmitted again {Section 3.2}. If another device stream contains data for transmission, if the device stream has permission available in the data block, then the last RCB in the above example would be a device stream RCB followed by data instead of a transmission block terminator.

DOCUMENT CLASS ERS PAGE NO. 4-11  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

#### 4.4.3 FCS Change Blocks

The FCS change block is transmitted when the status of one or more of the streams has changed, and there is no data to transmit. The FCS change block is as follows:

SYN  
SYN  
SYN  
DLE or SOH - DLE if transparent mode  
STX  
BCB  
FCS - Changed FCS  
RCB = 0 - Transmission block terminator  
DLE or SYN - DLE if transparent mode  
ETB  
CRC-16  
PAD

DOCUMENT CLASS ERS PAGE NO. 5-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## 5.0 ERROR CONDITIONS

The error conditions that can occur are dependent in large part on what hardware is used by a terminal. A few error conditions that are not hardware dependent are the following:

- CRC-16 Error
- Illegal Block Make-up
- Unknown response
- Time-out
- BCB Error

### 5.1 CRC-16 Error {Cyclic Redundancy Checking}

Cyclic redundancy checking is a type of error checking which is employed to help insure error free data transmission. A cyclic redundancy check is a division performed by both the transmitting and receiving processors using the numeric binary value of the message as a dividend and a constant as a divisor. The quotient is discarded, and the remainder serves as a check character. The receiving processor compares the transmitted remainder to its computed remainder. If the two remainders are equal, there is no error. If the two remainders are not equal, an error has occurred. CRC occurs only on data blocks.

If a CRC-16 error occurs, the receiving processor transmits a NAK block {Section 4.1.2} to the transmitting processor which informs the transmitting processor that a retransmission of the last block is required. If the retransmitted block is correct, the processing continues.

### 5.2 Illegal Block Make-Up Error

A data block must end with an ETB control character. If the data block does not end with an ETB, then an illegal block make-up error occurs. The required error recovery procedure for this error is to have the receiving processor transmit a NAK block {Section 4.1.2} to the other processor. The NAK block informs the other processor that a retransmission of the last block is required. If the retransmitted block is correct, the processing continues.

### 5.3 Unknown Response Error

An unknown response error occurs when the response received from the transmitting processor is not one of the following:

1. A data block beginning with DLE, STX control characters - transparent mode.

DOCUMENT CLASS ERS PAGE NO. 5-2  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

2. A data block beginning with SOH, STX control characters - non-transparent mode
3. An ACK block {Section 4.1.1}.
4. A NAK block {Section 4.1.2}

If an unknown response error occurs, the receiving processor transmits a NAK block to the other processor which informs the other processor that a retransmission of the last block is required. If the retransmitted block is correct, the processing continues.

#### 5.4 Time-out Error

From the moment communications are established until the last block is transmitted after SIGN-OFF, transmission blocks are expected at one processor or the other at least every two seconds after a block was transmitted by the receiving processor, or time-out error occurs.

If a time-out error occurs, the receiving processor transmits a NAK block to the other processor which informs the other processor that a retransmission of the last block is required. If the retransmitted block is correct, the processing continues.

#### 5.5 BCB Error

Every data block contains a BCB byte {Section 4.2.1}, and in each BCB byte is a block sequence count. The data blocks are transmitted in sequentially ascending order unless an ignore or reset BCB byte is transmitted. If the block sequence count in the data block is not equal to the block sequence count expected by the receiving processor, a BCB error occurs.

If a BCB error occurs and the block sequence count is a duplicate of a block sequence count previously received {expected block sequence count minus received block sequence count  $\leq 2$ }, the data block is ignored and processing continues as if an FCS change block or an ACK block was received.

If a BCB error occurs and the block sequence count is not a duplicate block sequence count as described in the previous paragraph, a BCB error block is transmitted from the terminal to the central processor. The BCB error block informs the other processor that a block sequence count error occurred, and the processor is to back up the file to the missing block or is to transmit a reset BCB byte. The format of the BCB error block is:

## CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 5-3  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

SYN

SYN

SYN

DLE or SOH

- DLE if transparent mode

STX

BCB = 1001XXXX

- ignore sequence checking, XXXX = received  
block sequence count

FCS

RCB = 11100000

- Bad BCB on last block

SRCB = 1000YYYY

- YYYY = expected block sequence count

SCB = 00000000

- End of Record

RCB = 00000000

- Transmission block terminator

DLE or SYN

- DLE if transparent mode

ETX

CRC-16

PAD

DOCUMENT CLASS ERS PAGE NO. 6-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## 6.0 TERMINAL START-UP AND TERMINATION

Terminal start-up is accomplished via a three step process.

1. Terminal initialization
2. Communication line initialization
3. SIGN-ON

### 6.1 Terminal Initialization

The terminal software is loaded and put into execution. The loading can be via paper tape, cards, mag. tape, or mass storage depending on the terminal hardware. The initialization processor establishes the I/O buffers and other necessary parameters. After all the buffers are set, a card is read from the card reader. If the card is a blank card, the default SIGN-ON parameters are used.\* If the card is a /\* SIGNON card {Section 6.3}, the parameters on the /\* SIGNON card are used instead of the default parameters. If the card is neither a blank card or a /\* SIGNON, an error has occurred. The recovery from this error is to be defined by the implementor of the MULTI-LEAVING protocol.

\* Default SIGN-ON parameters are assembled into the terminal software.

### 6.2 Communication Line Initialization

After the terminal is initialized, the communication line is initialized. The line is initialized by enabling the communication adapter and the data set. Communications are then established with HASP via the following procedure:

1. An Enquiry block {Section 4.1.3} is transmitted to the central processor from the terminal.
2. If the central processor can process the terminal data, an ACK block is transmitted from the central processor to the terminal. If the central processor cannot process the terminal data, the Enquiry block is ignored.
3. If an ACK block is received by the terminal, a buffer is constructed and the SIGN-ON record is queued for transmission to HASP {the central processor}.
4. If I/O errors occur or an ACK block is not received, step 1 is repeated.
5. After the SIGN-ON record is transmitted and a response is received, the terminal is ready to do normal processing.

DOCUMENT CLASS ERS PAGE NO. 6-2  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

### 6.3 SIGN-ON Block

A SIGN-ON block is transmitted to the central processor to inform the central processor that a terminal is signing on. The data portion of the SIGN-ON block is the SIGN-ON record. The format of the SIGN-ON card is:

column 1	16	25
/*SIGNON	REMOEnn	password

where nn = a one or two digit decimal number which correlates this remote terminal with information about it in the central computer.

password = blank unless a password is required.

The SIGN-ON block format is:

SYN	
SYN	
SYN	
DLE or SOH	- DLE if transparent mode
STX	
BCB = 1010XXXX	- reset count to XXXX
FCS	
RCB = 11110000	- General Control Record
SRCB= 11000001	- Initial SIGN-ON
SIGN-ON Record	
RCB = 00000000	- Transmission block terminator
DLE or SYN	- DLE if transparent mode
ETX	
CRC-16	
PAD	

### 6.4 SIGN-OFF Block

Terminal processing termination is accomplished via the /\* SIGNOFF card. The /\* SIGNOFF card when transmitted to the central processor as a record in a data block has the same effect as an EOF block [Section 4.4.2]. In addition to terminating the input stream, the /\* SIGNOFF record causes communications with the terminal to be terminated after completion of the current device streams. The /\* SIGNOFF card format is:

column 1
/*SIGNOFF



DOCUMENT CLASS ERS PAGE NO. 7-1  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## 7.0 MULTI-LEAVING COMMUNICATIONS

This section contains examples which show normal MULTI-LEAVING communications and error conditions communications.

Example no. 1 - Terminal number 2 is signed on, and two jobs are transmitted to the central processor. The last card transmitted is a /\* SIGNOFF card.

Terminal transmits	Central Processor Transmits
Enquiry Block	ACK block
SIGN-ON block {Terminal 2}	ACK block
Request to initiate card reader function transmission	Permission to initiate card reader function transmission
Data block no. 1 from card reader {Job no. 1}	ACK block
⋮	⋮
Data block no. X from card reader {Job no. 1}	ACK block
EOF block from card reader {Job no. 1}	ACK block
{May contain data prior to EOF}	
Request to initiate card reader function transmission	Permission to initiate card reader function transmission
Data block no. 1 from card reader {Job no. 2}	ACK block
⋮	⋮
Data block no. N from card reader {Job no. 2}	ACK block
Data block that contains /* SIGNOFF record	Disconnect

# CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 7-2  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

Example no. 2 - Terminal number 1 is signed on, and one job is transmitted to the central processor and two job print streams {only printer} are transmitted to the terminal {Print stream is from previous jobs and is available at SIGN-ON time}. The last input record transmitted is a /\* SIGNOFF card. Assume each print stream is 3 blocks long and the job input stream is 4 blocks long.

<u>Terminal transmits</u>	<u>Central Processor Transmits</u>
Enquiry block	ACK block
SIGN-ON block {Terminal 1}	Request to initiate print function transmission
Permission to initiate print function transmission	Print data block no. 1 {Job no. 1}
Request to initiate card reader function transmission	Permission to initiate card reader function transmission
Card reader data block no. 1	Print data block no. 2 {Job no. 1}
Card reader data block no. 2	Print data block no. 3 {Job no. 1} - EOF block
Card reader data block no. 3	Request to initiate print function transmission
Permission to initiate print function transmission	Print data block no. 1 {Job no. 2}
Card reader data block no. 4 {SIGN-OFF card}	Print data block no. 2 {Job no. 2}

DOCUMENT CLASS ERS PAGE NO. 7-3  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

Example no. 3 - Terminal is already signed on and idling. A job is read in and a punch and print stream are transmitted. After completion of the transmissions, return to an idle state. Card reader stream is 4 blocks long, and print and punch streams total 3 blocks long.

<u>Terminal Transmits</u>	<u>Central Processor Transmits</u>
ACK block {2 second interval}	ACK block {2 second interval}
Request to initiate card reader function transmission	Permission to initiate card reader function transmission
Card reader data block no. 1	Request to initiate printer function transmission
Permission to initiate printer function	Request to initiate punch function transmission
Permission to initiate punch function transmission	Data block no. 1 {Printer and punch}
Card reader data block no. 2	Data block no. 2 {Print EOF block and partial punch block}
Card reader data block no. 3	Data block no. 3 {Punch EOF block}
Card reader data block no. 4	ACK block
ACK block	ACK block {2 second interval}
ACK block {2 second interval}	ACK block {2 second interval}

## CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 7-4  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

Example no. 4 - Terminal was previously signed on. A job is read in and transmitted to the central processor. A transmission error occurs {CRC-1b error or illegal block make-up or unknown response error or time-out error} and recovery is accomplished. The card reader stream is 4 blocks long.

<u>Terminal Transmits</u>	<u>Central Processor Transmits</u>
ACK block {3 second interval}	ACK block {2 second interval}
Request to initiate a card reader function transmission	Permission to initiate a card reader function transmission
Data block no. 1	ACK block
Data block no. 2 {Transmission error}	NAK block
Data block no. 2	ACK block
Data block no. 3	ACK block
Data block no. 4 {EOF block}	ACK block
ACK block {2 second interval}	ACK block {2 second interval}

DOCUMENT CLASS ERS PAGE NO. 7-5  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

Example no. 5 - Terminal was previously signed on. A job is read in and transmitted to the central processor while a print job is transmitted to the terminal. A CRC-16 error occurs on one of the print blocks and the NAK block from the terminal is then lost. This causes a BCB error which is recovered from. The card reader stream is 4 blocks long and the printer stream is 5 blocks long.

<u>Terminal Transmits</u>	<u>Central Processor Transmits</u>
ACK block {2 second interval}	ACK block {2 second interval}
ACK block {2 second interval}	Request to initiate print function transmission
Permission to initiate print function transmission	Print data block no. 1
ACK block	Print data block no. 2
Request to initiate card reader function transmission	Permission to initiate card function transmission
Card reader data block no. 1	Print data block no. 3
Card reader data block no. 2	Print data block no. 4 {CRC-16 error}
NAK block {lost}	NAK block
Card reader data block no. 3*	Print data block no. 5
BCB error block	Print data block no. 4
Card reader data block no. 4 {EOF block}	Print data block no. 5 {EOF block}
ACK block	ACK block {2 second interval}
ACK block {2 second interval}	ACK block {2 second interval}

\* NAK block is never transmitted in response to a NAK block.

# CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 7-6  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

Example no. 6 - Terminal was previously signed on. A printer stream no. 1 is transmitted to the terminal, but while the transmission is occurring, printer stream no. 1 becomes not available. Printer stream no. 1 is 4 blocks long.

<u>Terminal Transmits</u>	<u>Central Processor Transmits</u>
ACK block {2 second interval}	ACK block {2 second interval}
ACK block {2 second interval}	Request to initiate print function transmission
Permission to initiate print function transmission	Printer stream no. 1 data block no. 1
ACK block	Printer stream no. 1 data block no. 2
FCS change block {printer stream no. 1 not available - bit A=0} See Section 4.2.2	ACK block
ACK block {2 second interval}	ACK block {2 second interval}
Idle until printer is available	
FCS change block {printer stream no. 1 now available - bit A=1}	Printer stream no. 1 data block no. 3
ACK block	Printer stream no. 1 data block no. 4 {EOF block}
ACK block	ACK block {2 second interval}
ACK block {2 second interval}	ACK block {2 second interval}

DOCUMENT CLASS ERS PAGE NO. 7-7  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

Example no. 7 - Terminal was previously signed on. A printer stream is transmitted to the terminal. While the transmission is occurring, a operator console command is keyed in.

Terminal Transmits	Central Processor Transmits
ACK block {2 second interval}	ACK block {2 second interval}
ACK block {2 second interval}	Request to initiate printer function transmission
Permission to initiate printer function transmission	Printer data block no. 1
ACK block	Printer data block no. 2
:	:
Operator Console Block	Printer data block no. X
ACK block	Printer data block no. X+1
:	:
ACK block	Printer data block no. N {EOF block}
ACK block	ACK block {2 second interval}
ACK block {2 second interval}	ACK block {2 second interval}

# CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. 8-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## 8.0 GLOSSARY

ACK - Affirmative acknowledgment {Section 4.1.1}

BCB - Block control byte {Section 4.2.1}

Control Block - Transmission block consisting only of control characters {Section 4.1}

CRC-16 - Cyclic redundancy check for 8-bit bytes {2 bytes long} {Section 5.1}

Data Block - Transmission block consisting of control characters, control bytes, and data {Section 4.3}

DCT - Device control table

Device Stream - A stream identifier associated with a specific device

DLE - Data link escape {Section 4.1}

EBCDIC - Extended binary coded decimal interchange code {Appendix C}

ENQ - Enquiry {Section 4.1.3}

EOF - End of file {Section 4.4.2}

ETB - End of transmission block {Section 4.3}

FCS - Function control sequence {Section 4.2.2}

HASP - Houston Automatic Spooling and Priority system

MULTI-LEAVING - Communication protocol that operates under HASP for computer-to-computer communications.

NAK - Negative acknowledgment {Section 4.1.2}

Non-transparent mode - Mode in which data-link line control characters are recognized as that.

PAD - A byte containing all 1 bits {Section 4.1 and 4.3}

RCB - Record control byte {Section 4.2.3}

SCB - String control byte {Section 4.2.5}

SOH - Start of heading {Section 4.3}



DOCUMENT CLASS ERS PAGE NO. B-2  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

SRCB - Sub-Record control byte {Section 4.2.4}

STX - Start of text {Section 4.3}

SYN - Synchronous idle {Section 4.1 and 4.3}

Transparent mode - A versatile mode that treats the data-link  
line-control characters only as specific  
bit patterns.

Wait-A-Bit - Suspend all stream transmissions {Section 4.2.2}

CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. A-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

APPENDIX A

IBM 360/20 TERMINAL LISTING

LCC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT P150CT70 11/21/72

1507 *	1508 *	1509 *	1510 CRHTID	SETA 2 *****	REMOTE'S IDENTIFICATION	P3024000
1511	CRACHINE	SETA 20	MODEL OF REMOTE TERMINAL CPU			P3026000
1512	CSUBMOD	SETA 2	SUB-MODEL 2 (MODEL 20)			P3028000
1513	CLINESPD	SETA 2000	COMMUNICATION LINE SPEED			P3030000
1514	CCORESIZ	SETA 8	AMOUNT OF CORE AVAILABLE TO PROGRAM			P3032000
1515	EXPARENT	SETC 'YES'	ADAPTER TRANSPARENCY FEATURE			P3034000
1516	CHICORE	SETA CCORESIZ	HIGHEST CORE LOCATION AVAILABLE			P3036000
1517	CHRTPORG	SETA K'80'	ORIGIN OF PROGRAM			P3038000
1518	CCRRNSGN	SETA 10	MAX NUM ERROR MSG QUEUED			P3040000
1519	CCRRITXL	SETA 13	LENGTH OF TEXT + BLANK			P3042000
1520 *						P3044000
1521 *			CONFIGURATION			P3046000
1522 *						P3048000
1523	CPDEV(1)	SETA 2203	PRINTER 1 MACHINE NUMBER			P3050000
1524	CPDEV(2)	SETA 0	PRINTER 2 MACHINE NUMBER			P3052000
1525	CPDEV(3)	SETA 0	PRINTER 3 MACHINE NUMBER			P3054000
1526	CPDEV(4)	SETA 0	PRINTER 4 MACHINE NUMBER			P3056000
1527	CPDEV(5)	SETA 0	PRINTER 5 MACHINE NUMBER			P3058000
1528	CPDEV(6)	SETA 0	PRINTER 6 MACHINE NUMBER			P3060000
1529	CPDEV(7)	SETA 0	PRINTER 7 MACHINE NUMBER			P3062000
1530	CPADR(1)	SETC '4'	PRINTER 1 ADDRESS			P3064000
1531	CPADR(2)	SETC '00F'	PRINTER 2 ADDRESS			P3066000
1532	CPADR(3)	SETC 'PPF'	PRINTER 3 ADDRESS			P3068000
1533	CPADR(4)	SETC 'YFP'	PRINTER 4 ADDRESS			P3070000
1534	CPADR(5)	SETC 'PPF'	PRINTER 5 ADDRESS			P3072000
1535	CPADR(6)	SETC 'PPF'	PRINTER 6 ADDRESS			P3074000
1536	CPADR(7)	SETC 'PPF'	PRINTER 7 ADDRESS			P3076000
1537	CRDEV(1)	SETA 2501	READER 1 MACHINE NUMBER			P3078000
1538	CRDEV(2)	SETA 0	READER 2 MACHINE NUMBER			P3080000
1539	CRDEV(3)	SETA 0	READER 3 MACHINE NUMBER			P3082000
1540	CRDEV(4)	SETA 0	READER 4 MACHINE NUMBER			P3084000
1541	CRDEV(5)	SETA 0	READER 5 MACHINE NUMBER			P3086000
1542	CRDEV(6)	SETA 0	READER 6 MACHINE NUMBER			P3088000
1543	CRDEV(7)	SETA 0	READER 7 MACHINE NUMBER			P3090000
1544	CRADR(1)	SETC '1'	READER 1 ADDRESS			P3092000
1545	CRADR(2)	SETC 'PPF'	READER 2 ADDRESS			P3094000
1546	CRADR(3)	SETC 'PPF'	READER 3 ADDRESS			P3096000
1547	CRADR(4)	SETC 'PPF'	READER 4 ADDRESS			P3098000
1548	CRADR(5)	SETC 'PPF'	READER 5 ADDRESS			P3100000
1549	CRADR(6)	SETC 'PPF'	READER 6 ADDRESS			P3102000
1550	CRADR(7)	SETC 'PPF'	READER 7 ADDRESS			P3104000
1551	CUDEV(1)	SETA 1442	PUNCH 1 MACHINE NUMBER			P3106000
1552	CUDEV(2)	SETA 0	PUNCH 2 MACHINE NUMBER			P3108000
1553	CUDEV(3)	SETA 0	PUNCH 3 MACHINE NUMBER			P3110000
1554	CUDEV(4)	SETA 0	PUNCH 4 MACHINE NUMBER			P3112000
1555	CUDEV(5)	SETA 0	PUNCH 5 MACHINE NUMBER			P3114000
1556	CUDEV(6)	SETA 0	PUNCH 6 MACHINE NUMBER			P3116000

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	F150CT70	11/21/72
1557	CODEV (7)	SETA	0		PUNCH 7 MACHINE NUMBER	P3128000	
1558	CUADR (1)	SETC	'3'		PUNCH 1 ADDRESS	P3128000	
1559	CUADR (2)	SETC	'FFF'		PUNCH 2 ADDRESS	P3128000	
1560	CUADR (3)	SETC	'FFF'		PUNCH 3 ADDRESS	P3130000	
1561	CUADR (4)	SETC	'FFF'		PUNCH 4 ADDRESS	P3132000	
1562	CUADR (5)	SETC	'FFF'		PUNCH 5 ADDRESS	P3134000	
1563	CUADR (6)	SETC	'FFF'		PUNCH 6 ADDRESS	P3136000	
1564	CUADR (7)	SETC	'FFF'		PUNCH 7 ADDRESS	P3138000	
1565	CODEV (1)	SETA	0		CONSOLE MACHINE NUMBER	P3140000	
1566	CUADR (1)	SETC	'01P'		CONSOLE ADDRESS	P3142000	
1567	CUADR (1)	SETC	'020'		ADDRESS OF COMMUNICATIONS ADAPTER	P3144000	
1568	ALP				(HICORE GT 32) .HISKPI	P3146000	
1569	EL	SETA	2		LENGTH ATTRIBUTE OF ACOMS	P3148000	
1570		AGO				P3150000	
1571	.HISKP	ANOP				P3156000	
1572	ER (1)	SETB	1		NO NON DUAL HEADER	P3158000	
1573	ER (2)	SETB	1		NO DUAL 2520	P3160000	
1574	ER (3)	SETB	1		NO DUAL 1442	P3162000	
1575	ER (4)	SETB	1		NO 2540 PUNCH	P3164000	
1576	ER (5)	SETB	1		NO NON DUAL PUNCH	P3166000	
1577	ER (6)	SPTB	1		NOT MOD 20	P3168000	
1578	ER (7)	SETB	1		NO DUAL 2560	P3170000	
1579	ER (8)	SETB	1		NO SINGLE POCHEST 1442	P3172000	
1580	EPRTSIZE	SETA	120		MAXIMUM PRINT LINE SIZE	P3174000	
1581	EWOSIZE	SETA	120		LENGTH OF CONSOLE INPUT AREA	P3176000	
1582	*					P3178000	
1583	*				INTERNAL VARIABLES	P3180000	
1584	*					P3182000	
1585	ENUBUFS	SETA	8		NUMBER OF TP BUFFERS	P3184000	
1586	ETBPSIZ	SETA	512		DEFAULT BUFFER SIZE	P3186000	
1587	ELBPSIZ	SETA	400		MULTI-LEAVING BUFFER SIZE	P3188000	
1588	ETBPSIZ	SETA	6HLEPSIZ		TRANSMISSION BUFFER SIZE	P3190000	
1589	ETBPSIZ	SETA	ETBPSIZ+ETBPSIZ/2+2		FORCE BUFFER SIZE EVEN	P3192000	
1590	ENUTANK	SETA	8		NUMBER OF DECOMPRESSION TANKS	P3194000	
1591	ECNPTYPE	SETA	3		*****COMPRESSION TECHNIQUE INDICATOR	P3196000	
1592	*				(0 = NO COMPRESSION)	P3198000	
1593	*				(1 = TRAILING BLANK ELIMINATION)	P3200000	
1594	*				(2 = BLANK COMPRESSION ONLY)	P3202000	
1595	*				(3 = COMPRESS ALL IDENTICAL CHARS)	P3204000	
1596	ECCT	SETA	4		MINIMUM EQUAL CHARACTERS TO COMPRESS	P3206000	
1597	ELOGCLAS	SETA	0		LOWEST ERROR SEVERITY TO LOG	P3208000	
1598	EGEN	SETC	'HOGEN'		SET TO GEN FOR ALL MACRO PRINT	P3210000	
1599	EPRTCONS	SETA	0		PRINT CONSOLE MESSAGES OPTION	P3212000	
1600	ELOCCH	SETA	0		LOCAL CONSOLE OPTION	P3214000	
1601	EHONE	SETA	0		HONE LOOP OFF	P3216000	
1602	*					P3218000	
1603	*				FUNCTION CONTROL MASKS FOR TCPS	P3220000	
1604	*					P3222000	
1605	ECPCS	SETA	X'0000'		CONTROL RECORD PROCESSOR	P3224000	
1606	EPPCS (1)	SETA	X'0800'		PRINTER 1	P3226000	
1607	EPPCS (2)	SETA	X'0400'		PRINTER 2	P3228000	
1608	EPPCS (3)	SETA	X'0200'		PRINTER 3	P3230000	
1609	EPPCS (4)	SETA	X'0100'		PRINTER 4	P3232000	
1610	EPPCS (5)	SETA	X'0008'		PRINTER 5	P3234000	
1611	EPPCS (6)	SETA	X'0004'		PRINTER 6	P3236000	

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
1612	6PFC(7)				SETA X'0002'	PRINTER 7
1613	6PFC(1)				SETA X'0001'	PUNCH 1
1614	6PFC(2)				SETA X'0002'	PUNCH 2
1615	6PFC(3)				SETA X'0004'	PUNCH 3
1616	6PFC(4)				SETA X'0008'	PUNCH 4
1617	6PFC(5)				SETA X'0100'	PUNCH 5
1618	6PFC(6)				SETA X'0200'	PUNCH 6
1619	6PFC(7)				SETA X'0400'	PUNCH 7
1620	6PFC(1)				SETA X'0040'	CONSOLE
1621	6PFC(1)				SETA X'0000'	OPERATOR COMMAND PCS
1622	6PFC(1)				SETA X'0800'	READER FUNCTION 1
1623	6PFC(2)				SETA X'0400'	READER FUNCTION 2
1624	6PFC(3)				SETA X'0200'	READER FUNCTION 3
1625	6PFC(4)				SETA X'0100'	READER FUNCTION 4
1626	6PFC(5)				SETA X'0008'	READER FUNCTION 5
1627	6PFC(6)				SETA X'0004'	READER FUNCTION 6
1628	6PFC(7)				SETA X'0002'	READER FUNCTION 7
1629 *					RECORD CONTROL BYTES	
1630 *						
1631	6RCB				SETA X'80'	CONTROL RECORD CONTROL BYTE
1632	6RCB(1)				SETA X'94'	STREAM 1 PRINT RECORDS
1633	6RCB(2)				SETA X'A4'	STREAM 2 PRINT RECORDS
1634	6RCB(3)				SETA X'E4'	STREAM 3 PRINT RECORDS
1635	6RCB(4)				SETA X'C4'	STREAM 4 PRINT RECORDS
1636	6RCB(5)				SETA X'D4'	STREAM 5 PRINT RECORDS
1637	6RCB(6)				SETA X'E4'	STREAM 6 PRINT RECORDS
1638	6RCB(7)				SETA X'F4'	STREAM 7 PRINT RECORDS
1639	6RCB(1)				SETA X'95'	STREAM 1 PUNCH RECORDS
1640	6RCB(2)				SETA X'A5'	STREAM 2 PUNCH RECORDS
1641	6RCB(3)				SETA X'D5'	STREAM 3 PUNCH RECORDS
1642	6RCB(4)				SETA X'C5'	STREAM 4 PUNCH RECORDS
1643	6RCB(5)				SETA X'D5'	STREAM 5 PUNCH RECORDS
1644	6RCB(6)				SETA X'E5'	STREAM 6 PUNCH RECORDS
1645	6RCB(7)				SETA X'F5'	STREAM 7 PUNCH RECORDS
1646	6RCB(1)				SETA X'91'	MESSAGE TO TERM OPERATOR
1647	6RCB(1)				SETA X'92'	OPERATOR COMMAND RCB
1648	6RCB(1)				SETA X'93'	STREAM 1 TO HASP
1649	6RCB(1)				SETA X'A3'	STREAM 2 TO HASP
1650	6RCB(2)				SETA X'B3'	STREAM 3 TO HASP
1651	6RCB(3)				SETA X'C3'	STREAM 4 TO HASP
1652	6RCB(4)				SETA X'D3'	STREAM 5 TO HASP
1653	6RCB(5)				SETA X'E3'	STREAM 6 TO HASP
1654	6RCB(6)				SETA X'F3'	STREAM 7 TO HASP
1655	6RCB(7)				SETA X'F3'	
1656 *						
1657 *						
1658 *						
1659 *						
1660 *						
1661 *						
1662 *						
1663 *						
1664 *						
1665 *						
1666 *						

THE FOLLOWING VALUES REPRESENT THE LIMIT OF QUEUING  
 POP EACH INDICATED DEVICE.  
 THE 'BL' VALUES REPRESENT THE MAXIMUM NUMBER OF BUFFERS  
 FROM HASP WHICH WILL BE QUEUED ON THE DEVICE.  
 THE 'TL' VALUES REPRESENT THE NUMBER OF DECOMPRESSED  
 RECORDS WHICH WILL BE QUEUED. NOTE THAT SINCE ONE  
 DECOMPRESSED RECORD WILL ALWAYS BE IN PROCESS, THE DEVICE  
 WILL REQUIRE ONE TANK MORE THAN THE TANK LIMIT(A 2540  
 PUNCH REQUIRES 2 MORE FOR ERROR RECOVERY PURPOSES).

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	F150CT70	11/21/72
1668	*				DECOMPRESSION TANK LIMITS	F3350000	
1669	*					F3352000	
1670	*					F3358000	
1671	*				PRINTERS	F3356000	
1672	EPBLM (1)	SETA			PRINTER 1-DECOMPRESSION LIMIT	F3358000	
1673	EPBLM (2)	SETA			PRINTER 2-DECOMPRESSION LIMIT	F3360000	
1674	EPBLM (3)	SETA			PRINTER 3-DECOMPRESSION LIMIT	F3362000	
1675	EPBLM (4)	SETA			PRINTER 4-DECOMPRESSION LIMIT	F3364000	
1676	EPBLM (5)	SETA			PRINTER 5-DECOMPRESSION LIMIT	F3366000	
1677	EPBLM (6)	SETA			PRINTER 6-DECOMPRESSION LIMIT	F3368000	
1678	EPBLM (7)	SETA			PRINTER 7-DECOMPRESSION LIMIT	F3370000	
1679	*				PUNCHES	F3372000	
1680	EPBLM (1)	SETA			PUNCH 1 - DECOMPRESSION LIMIT	F3374000	
1681	EPBLM (2)	SETA			PUNCH 2 - DECOMPRESSION LIMIT	F3376000	
1682	EPBLM (3)	SETA			PUNCH 3 - DECOMPRESSION LIMIT	F3378000	
1683	EPBLM (4)	SETA			PUNCH 4 - DECOMPRESSION LIMIT	F3380000	
1684	EPBLM (5)	SETA			PUNCH 5 - DECOMPRESSION LIMIT	F3382000	
1685	EPBLM (6)	SETA			PUNCH 6 - DECOMPRESSION LIMIT	F3384000	
1686	EPBLM (7)	SETA			PUNCH 7 - DECOMPRESSION LIMIT	F3386000	
1687	*				CONSOLE	F3388000	
1688	EPBLM (1)	SETA			CONSOLE DECOMPRESSION LIMIT	F3390000	
1689	*				CONTROL RECORD PROCESSOR	F3392000	
1690	EPBLM	SETA			CONTROL DECOMPRESSION LIMIT	F3394000	
1691	*				BUFFER QUEUING LIMITS	F3396000	
1692	*					F3398000	
1693	*				PRINTERS	F3400000	
1694	*					F3402000	
1695	EPBLM (1)	SETA			PRINTER 1-BUFFER QUEUING LIMIT	F3404000	
1696	EPBLM (2)	SETA			PRINTER 2-BUFFER QUEUING LIMIT	F3406000	
1697	EPBLM (3)	SETA			PRINTER 3-BUFFER QUEUING LIMIT	F3408000	
1698	EPBLM (4)	SETA			PRINTER 4-BUFFER QUEUING LIMIT	F3410000	
1699	EPBLM (5)	SETA			PRINTER 5-BUFFER QUEUING LIMIT	F3412000	
1700	EPBLM (6)	SETA			PRINTER 6-BUFFER QUEUING LIMIT	F3414000	
1701	EPBLM (7)	SETA			PRINTER 7-BUFFER QUEUING LIMIT	F3416000	
1702	*				PUNCHES	F3418000	
1703	EPBLM (1)	SETA			PUNCH 1 - BUFFER QUEUING LIMIT	F3420000	
1704	EPBLM (2)	SETA			PUNCH 2 - BUFFER QUEUING LIMIT	F3422000	
1705	EPBLM (3)	SETA			PUNCH 3 - BUFFER QUEUING LIMIT	F3424000	
1706	EPBLM (4)	SETA			PUNCH 4 - BUFFER QUEUING LIMIT	F3426000	
1707	EPBLM (5)	SETA			PUNCH 5 - BUFFER QUEUING LIMIT	F3428000	
1708	EPBLM (6)	SETA			PUNCH 6 - BUFFER QUEUING LIMIT	F3430000	
1709	EPBLM (7)	SETA			PUNCH 7 - BUFFER QUEUING LIMIT	F3432000	
1710	*				CONSOLE	F3434000	
1711	EPBLM (1)	SETA			CONSOLE BUFFER QUEUING LIMIT	F3436000	
1712	*				CONTROL RECORD PROCESSOR	F3438000	
1713	EPBLM	SETA			CONTROL BUFFER QUEUING LIMIT	F3440000	
1714	.NOSETCS	ANOP				F3442000	
1715		PRINT			PRINT EGEN		
		PRINT			PRINT NOGEN	F3444000	

HR2 L O A D E R -- PUNCHES N/20 OR NON 20 LOADER DECKS

PAGE 82

LOC		OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
1718		AIF				(MACHINE EQ 20).LOAD20	P3450000
1719		.LOAD20				ANOP	P3456000
1720		PUNCH	0	0+88	0	0 N 0+8 0 N000 NY000 00 00 00 XP3458000	P3458000
1721		.SKIP				ANOP	P3460000
						PUNCH LAST LOADER CARD	P3462000

LOC	OBJECT CODE	ADDR1	ADDR2	SYMT	SOURCE STATEMENT	
000000				1724	HASRTP START 0	F3468000
				1725 *		F3470000
				1726 *	DEBUGGING VARIABLES	F3472000
				1727 *		F3474000
				1728	EDRBUG SETA 1	F3476000
				1729	ETRACE SETA 0	F3478000
				1730	EREP SETA 1	F3480000
				1731 *	NO TRACE OPGADATION PATCH MODE ON	F3482000
				1732 *	CONFIGURATION DEPENDENT EQUATES	F3484000
				1733 *		F3486000
				1734	\$CONFIG	F3488000
				1753	6A SETA 1	F3490000
				1754 *		F3492000
				1755 *	SYMBOLIC DEFINITIONS USED TO REFER TO TCT LOCATIONS	F3494000
				1756 *	** SEE GLOBAL STORAGE FOR UNIQUE PROCESSORS EQUIVALENT DEFS	F3496000
				1757 *		F3498000
000000				1758	TCTDSECT DSECT	F3500000
				1759	DEFTCT T	F3502000
				1779 *	DEFINE TCT SYMBOLS	F3504000
				1780 *	TCTSTAT BIT DEFINITIONS	F3506000
				1781 *		F3508000
000008				1782	TCT1403 EQU X'08'	TCT STATUS PLGS FOR 1403, SW ON
000008				1783	TCT1443 EQU X'08'	TCT STATUS PLGS FOR 1443, SW ON
000008				1784	TCT2203 EQU X'08'	TCT STATUS PLGS FOR 2203, SW ON
000000				1785	TCT2501 EQU X'00'	TCT STATUS PLGS FOR 2501
000000				1786	TCT2520 EQU X'00'	TCT STATUS PLGS FOR 2520
000001				1787	TCT2520 EQU X'01'	TCT STATUS PLGS FOR 2520 DUAL
000008				1788	TCT1442 EQU X'02'	TCT STATUS PLGS FOR 1442
000002				1789	TCT1442 EQU X'02'	TCT STATUS PLGS FOR 1442 DUAL
000004				1790	TCT2540 EQU X'04'	TCT STATUS PLGS FOR 2540
000002				1791	TCT2560 EQU X'02'	TCT STATUS PLGS FOR 2560 DUAL
000000				1792	TCT2560 EQU X'00'	TCT STATUS PLGS FOR 2560
000010				1793	TCT1052 EQU X'10'	TCT STATUS PLGS FOR 1052
000010				1794	TCT2152 EQU X'10'	TCT STATUS PLGS FOR 2152
000004				1795	TCTREL EQU X'04'	INTERLOCK RELEASE REQ FOR CONSOLE
000003				1796	TCTDUAL EQU X'80'	EITHER OVAL DEVICE
000080				1797	TCTOPEN EQU X'80'	TCT OPEN BIT
000040				1798	TCTACT EQU X'40'	ACTION REQUIRED ON THIS TCT
000008				1799	TCTREQ EQU X'08'	CONSOLE REQUEST BIT
000008				1800	TCTPRTSW EQU X'08'	PRINTER AVAILABLE FOR CONSOLE
000020				1801	TCTSTOP EQU X'20'	TCT IS IN STOPPED STATE
				1802 *		.S COMMAND REQUIRED TO START UP
				1803 *	TCTUCB BIT DEFINITIONS	
000080				1805	TCTNPOINT EQU X'80'	NO INTERRUPTS ON DEVICE ALLOWED
				1807 *	DUMMY TCT DEVICE DEFINITIONS FOR CTLTCT	
000000				1809	C0 EQU X'00'	DUMMY OPCODE FOR CONTROL



LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
000000				1810 C01	EQU X'00'		
000000				1811 CF0	EQU X'00'		F3566000
000000				1812 TCT0	EQU 0		F3568000
							F3570000
				1814 ***	TCTECB BIT DEFINITIONS		F3574000
000010				1816 TCTBUSY	EQU X'10'		
					DEVICE BUSY BIT		F3578000
				1818 ***	TCTSENSE BIT DEFINITIONS (FIRST BYTE)		
				1820 TCTINREQ	EQU X'40'		F3582000
000040					INTERVENTION REQUIRED BIT		F3586000

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
000000					TRANSMISSION BUFFER DSSECT		
000000					BEGINNING OF THE BUFFER		
000002					BUFFER CHAIN FIELD		
000004					COUNT OF BYTES TO TRANSMIT		
000005					BUFFER STATUS BYTE		
000007					TRANSMISSION CONTROL BYTES		
000008					BLOCK CONTROL BYTE		
00000A					FUNCTION CONTROL SEQUENCE		
000018					DATA PORTION OF TP BUFFER		
					FULL ALIGNMENT FOR THE NEXT		
1836 *							
1837 *							
1838 *							
					BUFFER STATUS BYT DEFINITIONS		
1840	BUPPAKE	EQU	X'01'		DUMMY BUFFER INDICATOR		
1841	BUPRESP	EQU	X'02'		RESPONSE ONLY IN BUFFER		
1842	BUPPAK	EQU	X'04'		NAK RESPONSE BEING SENT		
1843	BUPTEXT	EQU	X'08'		BUFFER CONTAINS TEXT INFORMATION		
1844	BUPUCHER	EQU	X'10'		UNIT CHECK EXPECTED		

HR2

DECOMPRESSION TANK DSECT

PAGE 46

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
000000					UNIT RECORD TANK DSECT	F3638000
000002					TANK CHAIN FIELD	F3640000
000003					TANK RECORD CONTROL BYTE	F3642000
000004					TANK SUB-RECORD CONTROL BYTE	F3644000
000006					COUNT OF DATA BYTES IN TANK	F3646000
					DATA AREA IN THE TANK	F3648000
					CL120 DATA AREA IN THE TANK	

LCC	OBJECT CODE	ADDR1	ADDR2	SYMT	SOURCE STATEMENT	PI50CT70	11/21/72
000000					LOG DSECT		
000000					LOG IDENTIFICATION		
000001					SEVERITY CODE OF MESSAGE		
000002					COUNT OF TOTAL ERRORS		
000004					TEXT OF MESSAGE		
000010					END OF DSECT		
1857	LOGDSECT	DSECT					
1858	LOGID	DS	C				
1859	LOGCLASS	DS	C				
1860	LOGCOUNT	DS	H				
1861	LOGTEXT	DS	CL(68BRTXTL-1)				
1862	LOGEND	DS	CL(13-1)				

LCC	OBJECT CODE	ADDR1	ADDR2	STHT	SOURCE STATEMENT
-----	-------------	-------	-------	------	------------------

E150CF70 11/21/72

000000		1865 HASRTP	CSECT			P3672000
		1866 AIP		(SMACHINE EQ 20).ORG20		P3674000
		1867 .ORG20	ANOP			F3766000
000000		1868 ORG	ORG	HASRTP	TO BEGINNING OF CSECT	F3768000
		1869 DS	DS	(CHRTDORG)C	PROGRAM ORIGIN	P3770000
000000			DS	(128)C PROGRAM ORIGIN		

LCC	OBJECT CODE	ADDR1	ADDR2	STAT	SOURCE STATEMENT	F150CT70	11/21/72
000080				1871	HASPRJE EQU *		
				1872	AIF (MACHINE EQ 20). EIGHTH SKIP FIRST 8 REGS IF 360/20		F3774000
000008				1873	. EIGHTH ANOP		F3776000
				1874	R8 EQU 8		F3794000
000009				1875	R9 EQU 9		F3796000
				1876	R10 EQU 10		F3798000
00000A				1877	R11 EQU 11		F3800000
00000B				1878	R12 EQU 12		F3802000
00000C				1879	R13 EQU 13		F3804000
00000D				1880	R14 EQU 14		F3806000
00000E				1881	R15 EQU 15		F3808000
00000F				1882	TCTR EQU 7		F3810000
000007					TCT BASE REGISTER		F3812000
1884 *							F3816000
1885 *							F3818000
1886 *							F3820000
REGISTER ASSIGNMENTS AND/OR TYPICAL ASSIGNMENTS							
1888 *					R15 = WORK REG (SECONDARY LINK OR PARAMETER REGISTER)		F3824000
1889 *					R16 = LINK REG		F3826000
1890 *					R13 = BUFFER POINTER		F3828000
1891 *					R12 = RESERVED		F3830000
1892 *					R11 = WORK		F3832000
1893 *					R10 = WORK		F3834000
1894 *					R9 = WORK		F3836000
1895 *					R8 = PARAMETER REGISTER		F3838000
1896 *					AIF (MACHINE EQ 20). X1		F3840000
1897 .X1					AIF (MACHINE EQ 20). BASOK1		F3840000
1898 .BASOK1					ANOP		F3840000
1899					USING HASPRJE-CHRTPOG,0,1,2,3 PROVIDE FOR 16K		F3840000
000000					USING HASPRJE-128,0,1,2,3 PROVIDE FOR 16K		F3840000
000080					OS (X*24)C SPACER FOR MODEL 20		F3840000
							F3840000
1901 .BASOK2					ANOP		F3840000
1902					AIF (CONSOLE EQ 0 AND EPRCONS EQ 0). EERLOG		F3870000
1903 .EERLOG					ANOP		F3872000
							F3902000

F150CT70 11/21/72

LCC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT

0000A4	4700	0258	1906	PRINT GEN	P3908000
0000A4	4700	089E	1907	\$START \$GENCON	P3910000
0000A8	4700	089E	1908	\$START DS OH	
0000AC	4700	0354	1909	\$CONTCON NOP \$CONTROL	
0000B0	4700	0432	1910	\$TRGETCH NOP \$TPGET	CONTROL RECORD PROCESSOR
0000B4	4700	054C	1911	\$PCOMH1 NOP \$PRTN1	INPUT BUFFER MANAGER
0000B8	4700	0DC2	1912	\$PCOMH1 B \$RRTN1	ENTRY POINT TO PRINT
0000BC	4700	00A4	1913	\$PCOMH1 NOP \$RRTN1	ENTRY POINT TO READ CARD
			1914	\$PCOMH1 NOP \$RRTN1	ENTRY TO PUNCH CARD
			1915	\$PCOMH1 B \$RRTN1	COMMUNICATIONS SUPERVISOR
			1916	\$PCOMH1 B \$RRTN1	

0000C2	0000		1918	\$CHTEMP \$ACOM 0	P3916000
0000C4	00000000		1920	\$LOGINFO DC A(0)	P3918000
0000CA			1921	\$LOGSAVE \$ACOM 0	P3920000
0000CA			1923	\$COMDCOM DS OC	P3922000
0000CA			1924	\$INPCOM DS OC	P3924000
0000CA			1925	\$DATCOM DS OC	P3926000
0000CA			1926	\$ROUCOM DS OC	P3928000

DISABLED TEMPORARY WORK  
INFORMATION TO BE LOGGED  
\$LOG REG SAVE AREA





HR2 CONTROL PROCESSOR TOTAL CONTROL TABLE -- C I C T

PAGE 52

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
				1974 6A	SETA 1		
				1975 6D	SETA 6CONSOLE		P3944000
				1976	AIF (6CONSOLE EQ 0 AND 6PRCONS EQ 0).TCTWTO		P3946000
				1977 .TCTWTO	ANOP		P3948000
				1978 6D	SETA 6NUHPR1		P3956000
				1979 .TCTPRTL AIF	(6A GT 6NUHPR1).TCTPRT		P3958000
							P3960000

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70 11/21/72
1				1981	SGENCTCT P,SPPCS(6A),SPRCE(6A),SPADR(6A),SPDEV(6A),SPFLH(6A), CP3968000	
2				1982+STCT2	DS OH	
3	0000DA			1983**	GPBLH(6A),SPRCE(6A),SPRCEB(6A) PRINTER TCT	F3966000
4				1984**	ORIGIN OF TOTAL CONTROL TABLE	
5				1985**	SYMBOLIC DEFINITIONS USED BY PROCESSOR TO REFER TO TCT	
6	0000DA			1986+PTCT	DS OH	
7	00000A			1987+PCTNEAT	DS H	
8	0000DC			1988+PCTPCS	DS AL2	
9	0000DE			1989+PCTRCB	DS CL1	
10	0000DF			1990+PCTSTAT	DS CL1	
11	0000E0			1991+PCTCOM	DS H	
12	0000E1			1992+PCTINRCB	DS PCTRCB	
13	0000E2			1993**	READER RCB IDENTIFICATION	
14	0000E3			1994**	NORMAL DEVICE EXTENSION	
15	0000E4			1995**	DS H	
16				1996+PCTTANK	DS H	
17				1997+PCTBUFER	DS H	
18				1998**	TKNLM,TKNCT AND BUFLM,BUFCT MUST APPEAR IN SEQ AND START	
19	0000E6			2000**	ON HALF WORD BOUNDARIES	
20	0000E7			2001+PCTTKNLM	DS CL1	
21	0000E8			2002+PCTTKNCT	DS CL1	
22	0000E9			2003+PCTBUFLM	DS CL1	
23	0000DA			2004+PCTBUFC	DS CL1	
24				2005+	ORG STCT2	
25				2006**	STORAGE ALLOCATION AND INITIAL VALUES FOR TCT	
26				2007**	DS OH	
27	0000DA 00EA			2009+	DC Y(STCT3)	
28	0000DC 080			2010+	DC AL2(2048)	
29	0000DE 94			2011+	DC AL1(148)	
30	0000DF 08			2012+	DC AL1(TCT2203)	
31	0000E0 00AC			2013+	DC Y(SPCOMH)	
32				2014+	NORMAL EXTENSION TO TOTAL CONTROL TABLE	
33	0000E2 0000			2015**	DC Y(0)	
34	0000E4 0000			2016+	DC Y(0)	
35	0000E6 01			2017+	DC AL1(1)	
36	0000E7 00			2018+	DC X'00'	
37	0000E8 02			2019+	DC AL1(2)	
38	0000E9 00			2020+	DC X'00'	
39				2021+	DC X'00'	
40				2022 EA	SETA EA+1	
41				2023	AGO .TCTPRTL	
42				2024 .TCTPRTL AIF	(EA GT SHUHPRT).TCTPRT	
43				2025 .TCTPRT ANOP	SETA 1	
44				2026 EA	SETA	
45				2027 ED	SETA SHUHPRT	
46				2028 .TCTB0RL AIF	(EA GT SHUHPRT).TCTBDR	
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92						
93						
94						
95						
96						
97						
98						
99						
100						

BR2 READER TOTAL CONTROL TABLES

PAGE 54

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	11/21/72
				2030	AIP (6S(6A) NS 0).TCTDR1	P3982000
				2031	\$GENTCT R,6RPCS(6A),6RRCB(6A),6HADR(6A),6RDEV(6A),0,0,0.	CP3984000
	00002A			2032+STCT3	DS OH	P3986000
				2033+*	ORIGIN OF TOTAL CONTROL TABLE	
				2034+*	SYMBOLIC DEFINITIONS USED BY PROCESSOR TO REFER TO TCT	
				2035+*		
	00002A			2036+RTCT	DS OH	
	00002A			2037+RCTHEXT	DS H	
	00002C			2038+RCTFCS	DS AL2	
	00002E			2039+RCTRCB	DS CL1	
	00002F			2040+RCTSTAT	DS CL1	
	0000F0			2041+RCTCOM	DS H	
	00002E			2042+RCTINRCB EQU	RCTRCB	
				2043+*	READER PCB IDENTIFICATION	
				2044+*	TANK EXTENSIONS FOR READER AND CONSOLE PROCESSORS	
				2045+*		
	0000F2			2046+RCTTANK1	DS H	
	0000F4			2047+RCTTRCB1	DS CL1	
	0000F5			2048+RCTTANC1	DS CL1	
	0000F6			2049+RCTTCT1	DS H	
	0000F8			2050+RCTTDA1	DS CL(RSIZE+4)	
	00014C			2051+RCTTANK2	DS H	
	00014E			2052+RCTTRCB2	DS CL1	
	00014F			2053+RCTTANC2	DS CL1	
	000150			2054+RCTTCT2	DS H	
	000152			2055+RCTTDA2	DS CL(RSIZE+4)	
	00002A			2056+	ORG STCT3	
				2057+*		
				2058+*	STORAGE ALLOCATION AND INITIAL VALUES FOR TCT	
				2059+*		
	00002A			2060+	DS OH	
	00002A 01A6			2061+	DC Y(STCT4)	
	00002C 0800			2062+	DC AL2(2048)	
	00002E 93			2063+	DC AL1(147)	
	00002F 00			2064+	DC AL1(TCT2501)	
	0000F0 00B0			2065+	DC Y(SRCONH1)	
				2066+*	INPUT TANKS FOR READER AND CONSOLE	
	0000F2 0000			2067+	DC Y(0)	
	0000F4 93			2068+	DC AL1(147)	
	0000F5 80			2069+	DC X'80'	
	0000F6 0050			2070+	DC H'80'	
	0000F8 40404040404040			2071+	DC CL(RSIZE+4)*	
	00014C 0000			2072+	DC Y(0)	
	00014E 93			2073+	DC AL1(147)	
	00014F 80			2074+	DC X'80'	
	000150 0050			2075+	DC H'80'	
	000152 40404040404040			2076+	DC CL(RSIZE+4)*	
				2077	AGO .TCTDR2	
				2078 .TCTDR2 ANOP	AGO	
				2079 6A SETA	6A+1	
				2080	AGO .TCTDR1	
				2081 .TCTDR1 AIF	(6A GT 6NUHNR).TCTDR	
				2082 .TCTDR ANOP		
				2083 6A SETA	1	

P3988000  
P4000000  
P4002000  
P4004000  
P3978000  
P4006000  
P4008000



[illegible]

LOC	OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	
000000				2133 STCT6B EQU 0	LAST TCT POINTS TO ZERO	F4028000
				STCT5 EQU 0	LAST TCT POINTS TO ZERO	
				2134 PRINT 6GEN		F4030000
				PRINT HOGEN		
				2136 .NOSTCTS ANOP		F4034000
				2137 *		F4036000
				2138 *	ERROR LOG TABLE	F4038000
				2139 *		F4040000
000186				2140 LOGTABLE DS OH		F4042000
000248				2141 ORG **X'92'	ORG OVER THE LOG TABLE	F4044000
000145				2142 SERRTAB EQU LOGTABLE-LOGEND*LOGDSECT	ERROR LOG TABLE FOR CE	F4046000
				2144 *		F4050000
				2145 *	BEGINNING OF QUEUE CHAINS	F4052000
				2146 *		F4054000
000248 0000				2148 STERP DC H'0'	GLOBAL TEMPORARY WORK	F4058000
				2149 \$BUPPOOL \$ACON \$1STBUP	BUFFER POOL CHAIN CONTROL WORD	F4060000
				2151 \$TANKPOL \$ACON \$1STANK	TANK QUEUE CONTROL WORD	F4062000
				2153 \$OUTBUP \$ACON 0	MISSION BUFFER CHAIN CTL WORD	F4066000
000252				2155 \$CORESIZ \$ACON 0	SYSTEM MEMORY SIZE	F4068000
000254 8PCF				2157 \$PCSOUT DS OH	OUTGOING FUNCTION CONTROL SEQUENCE	F4070000
000254 8PCF				2158 \$PCSIN DC X'8FCF'	ALL FUNCTIONS PERMITTED	F4072000
				2159 \$PCSIN DC X'8FCF'	INCOMING PCS FROM HASP	F4074000
000256 00A0				2160 AIF (MACHINE NE 20).N20CON	DELAYING CONSTANT FOR MOD 20	F4076000
				2161 \$WAITCON DC H'160'		F4078000
				2162 AGO .N30CON		F4080000
				2163 .N30CON ANOP		F4086000

HR2 S C O N T R O L -- INPUT CONTROL RECORD PROCESSOR

PAGE 58

LCC	OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	P150CTV0	11/21/72
				2165 *		F4090000	
				2166 *		F4092000	
	0000A4			2167 SCRTN1	NULL	F4094000	
	000000			2169 \$SCOMM1	\$CONTCOM	F4096000	
	000000			2170 CFLAGS	0	F4098000	
				2171 COPCODE	0	F4100000	
				2172 *		F4102000	
				2173 \$CONTROL	NULL	F4104000	
				2175 \$LA	R13,\$CTITCT	F4106000	
				2177	USING TCTDSECT,R13	F4108000	
				2178	\$CHAIN TCTANK,RB,NOSSH	F4110000	
	00026E 4770 027A			2183	BNZ HPROCESS	F4112000	
	000272 9200 00A5			2184	HVI \$CONTCOM+1,0	F4114000	
	000276 47F0 00A8			2185	B \$CONTCOM+4	F4116000	
				2186 *		F4118000	
				2187 *		F4120000	
				2188 *	PROCESS A CONTROL RECORD	F4122000	
				2190 HPROCESS	NULL	F4126000	
				2192	\$TCTPOST T,R10	F4128000	
				2198	DROP R13	F4130000	
				2199	USING TANKDSEC,R8	F4132000	
	000000			2200	UNPK MTEMP+1(1),TANKRCB(1)	F4134000	
	00028E F300 030F 8002 0030F 00002			2201	HI MTEMP+1,3	F4136000	
	000294 9403 030F 0030F			2202	LH R10,MTEMP	F4138000	
	000298 48A0 030E 0030E			2203	AR R10,R10	F4140000	
	00029C 1AAA			2204	AR R9,MCONTTAB-2	F4142000	
				2206	\$LA R9,R10	F4144000	
	0002A2 1A9A			2207	AR R9,0(0,R9)	F4146000	
	0002A4 4890 9000 00000			2208	LH R9,0(0,R9)	F4148000	
	0002AB 4090 02AE 002AE			2209	STH R9,*+6	F4150000	
	0002AC 47F0 0000 00000				B		

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	2150CT70	11/21/72
2211 *							
2212 *					SUBROUTINE TO FIND TCT CORRESPONDING TO SRCB YUNCTION	F4154000	
2213 *					R14=RETURN, CC ME 0 -R13 CONTAINS TCT, CC=0-HOT POUND	F4156000	
						F4158000	
2215	NTCTPIND NULL *						
2217	SLA				ENTRY POINT	F4162000	
2219	USING TCTDSECT, R13				FIRST TCT	F4164000	
2220	HNEXTTCT NULL *				ADDRESSABILITY	F4166000	
2222	CLC TCTRCB, TANKSECB				IS THIS CORRECT TCT	F4168000	
2223	BE HTCTOK				BR IF YES	F4170000	
2224	AIP (SR(2) AND SR(3) AND SR(7)).NDUAL				BR IF YES	F4172000	
2225	.NDUAL				AND SR(7)).NDUAL	F4174000	
2226	SLOAD					F4180000	
2228	SLTR				NO... TO NEXT	F4182000	
2230	BNZ HNEXTTCT				IS THIS ALL...	F4184000	
2231	BR R14				BR IF MORE	F4186000	
2232	HTCTOK SLTR R14, R14				RETURN WITH COND. CODE = 0	F4188000	
2234	BR R14				SET COND. CODE NON-ZERO	F4190000	
					AND RETURN	F4192000	



LOC OBJECT CODE ADDR1 ADDR2 SHT SOURCE STATEMENT P150CT70 11/21/72

2237 \* SUBROUTINE TO STPPUT AN ANSWERING CTL RECORD  
 2238 \* RB = TANKADDR  
 2239 \*

F4198000  
 F4200000  
 F4202000

LOC	OBJECT CODE	ADDR1	ADDR2	SHT	SOURCE STATEMENT	ENTRY POINT
0002D6	4770 0224	002F8			GO PUT RECORD	F4206000
0002DA	D201 00A6 0310 000A6 00310				EXIT IF ACCEPTED	F4208000
0002E4	4720 00A8	000A8			SET COMUTATOR RE-ENTRY	F4210000
2241					SAVE TANK ADDR	F4212000
2243					EXIT TO COMUTATOR	F4214000
2247					RETRY PUTTING RECORD	F4216000
2248					RESTORE TANK ADDR	F4218000
2249					TRY IT	F4220000
2251					CYCLE IF STILL NOT ACCEPTED	F4222000
2252					ENTRY AT END OF PROCESSING	F4224000
2254					FREE TANK	F4226000
2256					RESET COMUTATOR	F4228000
2260					AND TRY NEXT TANK	F4230000
2261					TANK REG STORAGE	F4232000
2263					TEMP STORAGE (HI-BYTE ALWAYS ZERO)	F4234000
2267					COMUTATOR ADJUSTMENT ADDR	F4236000
2269					COMUTATOR ADJUSTMENT ADDR	F4238000
2271					CONTROL TYPE BRANCH TABLE	F4240000
2272					RESERVED	F4242000
2273					RESERVED	F4244000
2274					RESERVED	F4246000
2276					RESERVED	F4248000
2277					RESERVED	F4250000
2278					RESERVED	F4252000
2279					RESERVED	F4254000
2280					RESERVED	F4256000
2281					RESERVED	F4258000
2282					RESERVED	F4260000
2283					GENERAL CONTROL TYPE	F4262000

LOC	OBJECT CODE	ADDR1	ADDR2	SRST	SOURCE STATEMENT	
2286 *					CONTROL RECORD, TYPE = 000 (RESERVED)	F4264000
2287 * MC0						F4266000
2288 *						F4268000
2290 *					RESERVED FOR FUTURE USE	F4272000
2291 *						F4274000
2292 *						F4276000
2293 MC0					EQU MEXIT TO DEFINE SYMBOL	F4278000
0002F4						
2295 *					CONTROL RECORD, TYPE = 001 (REQUEST TO START FUNCTION)	F4282000
2296 * MC1						F4284000
2297 *						F4286000
2299 MC1					NULL *	F4290000
2301 *					BAS R14, HCTCFIND	F4292000
2302					BNZ HCTCFIND	F4294000
00032E 4770 032E					STRACE SSH=YES	F4296000
2306					B MEXIT	F4298000
00032A 47F0 02F4					IGNORE REQUEST	F4300000
2308					CORRECT TCT FOUND	F4302000
00032E 947F D005					TCTSTAT, 255-TCTOPEN SHOW USE	F4306000
000332 D300 8002					CHARGE REQUEST TO PERMISSION	F4310000
000338 47F0 02D2					AND SEND IT	F4312000
2313						
2315 *					CONTROL RECORD, TYPE = 010 (PERMISSION TO START PCH)	F4316000
2316 * MC2						F4318000
2317 *						F4320000
2319 MC2					NULL *	F4324000
2321					STRACE SSH=YES	F4326000
2322					BAS R14, HCTCFIND	F4328000
2326					BZ MEXIT	F4330000
002F4					GO LOOK-UP TCT	F4332000
2327					IGNORE IF NOT FOUND	F4334000
2329					GET COMPUTATOR ENTRY	F4336000
000348 92F0 8001					OPEN IT	F4338000
00034C 947F D005					TCTSTAT, 255-TCTOPEN SHOW OPEN	
000350 47F0 02F4					AND EXIT	
2331						
2333 *					CONTROL RECORD, TYPE = 011 (RESERVED)	F4342000
2334 * MC3						F4344000

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
000274	2336	HC3	EQU	HEXIT	NOT YET DEFINED	P150CT70 11/21/72 P4368000
	2338 *					P4352000
	2339 *	HC4			CONTROL RECORD, TYPE = 100 (RESERVED)	P4354000
	2340 *					P4356000
000274	2342	HC4	EQU	HEXIT	NOT YET DEFINED	P4360000
	2344 *					P4364000
	2345 *	HC5			CONTROL RECORD, TYPE = 101 (RESERVED)	P4366000
	2346 *					P4368000
000274	2348	HC5	EQU	HEXIT	TO DEFINE SYMBOL FUNCTION IS NOT YET SUPPORTED	P4372000 P4374000
	2349 *					
	2351 *					P4378000
	2352 *	HC6			CONTROL RECORD, TYPE = 110 (RESERVED)	P4380000
	2353 *					P4382000
	2355 *					P4386000
	2356 *				THIS CONTROL TYPE IS CURRENTLY UNDEFINED BUT IS RESERVED FOR FUTURE USE.	P4388000
	2357 *					P4390000
000274	2358 *					P4392000
	2359	HC6	EQU	HEXIT	TO DEFINE SYMBOL	P4394000
	2361 *					P4398000
	2362 *	HC7			CONTROL RECORD, TYPE = 111 (GENERALIZED CONTROL) (TYPE INDICATED IN SRCB)	P4400000
	2363 *					P4402000
	2364 *					P4404000
000274	2366	HC7	EQU	HEXIT	EMPTY POINT	P4408000
	2367 *					P4410000
	2368 *				CURRENTLY NO FUNCTIONS ARE IMPLEMENTED FOR THIS CONTROL FUNCTION. THE TYPE OF CONTROL RECORD, SUCH AS ACCOUNTING, SIGN-ON, INITIALIZATION, ETC, IS INDICATED IN THE SRCB.	P4412000 P4414000 P4416000 P4418000
	2370 *					P4420000
	2371 *				THE SRCB IDENTIFICATION CHARACTERS 'A' THRU 'H' AND '0' THRU '9' ARE RESERVED FOR FUTURE HASP DEVELOPMENT. ALL OTHER EBCDIC CHARACTERS, WHICH	P4422000 P4424000
	2372 *					
	2373 *					
	2374 *					

RR2 \$ C O M T R O L -- INPUT CONTROL RECORD PROCESSOR

LCC	OBJECT CODE	ADDR1	ADDR2	SENT	SOURCE STATEMENT	P15OCT70	11/21/72
1							
2				2375 *	ARE TRANSMISSION COMPATIBLE ARE AVAILABLE TO THE		F4426000
3				2376 *	USER TO ADD ADDITIONAL CONTROL FUNCTIONS.		F4428000
4				2377 *			F4430000
5							
6							
7							
8				2379	DROP R8,R13		F4434000
9				2380	PRINT GEN		F4436000
10					PRINT NOGEN		
11					AIP (CONVERT EQ 0). PRNSKP		F4438000
12				2381			
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							
61							
62							
63							
64							
65							
66							
67							
68							
69							
70							
71							
72							
73							
74							
75							
76							
77							
78							
79							
80							
81							
82							
83							
84							
85							
86							
87							
88							
89							
90							
91							
92							
93							
94							
95							
96							
97							
98							
99							
100							

LCC OBJECT CODE		ADDR1	ADDR2	STAT	SOURCE STATEMENT		P150CT70	11/21/72
	2383 6A				SETA 0		F4442000	
	2384 *						F4444000	
	2385 *				BASE REGISTER ASSIGNMENT		F4446000	
	2386 *						F4448000	
000000	2387				USING TANKDSEC,R8		F4450000	
	2388				AIF (6NUMPRT EQ 1).PSK1		F4452000	
	2389 .PSK1				ANOP		F4456000	
	2390 \$PRTN1				NULL		F4458000	
	2392 PNEXT				END *		F4460000	
000354	2393				\$GETNKP R,R8,R9,EMPTY=WAIT GET NEXT TANK TO PRINT		F4462000	
	2406				CLI TANKCHT+1,0		F4464000	
000388	9500 8005	00005			(6PRTCONS EQ 0).PSK5		F4502000	
	2407				AIF		F4504000	
	2408 .PSK5				ANOP		F4506000	
00038C	4780 0416	00476			BE PPREX		F4508000	
	2409				ANOP		F4510000	
000390	958E 8003	00003			CLI TANKSRCB,X18E'		F4512000	
	2411				LOOK FOR CHANGE IN FORHS		F4514000	
000394	4770 039C	0039C			AIF (6CONSOLE EQ 0).PSK5B		F4516000	
	2413 .PSK5B				BNE **8		F4518000	
000398	9291 8003	00003			HVI TANKSRCB,X191'		F4520000	
	2414				INSERT PRINT AND EJECT SRCB		F4522000	
00039C	D200 03FF 8005 003FF 00005				HVC PCTCCHCT+1(1),TANKCHT+1 SET THE LINE IN CCH		F4524000	
	2416						F4526000	
	2417 *				SET UP CARRIAGE CONTROL		F4528000	
	2418 *						F4530000	
	2419 *				(SMACHINE EQ 20).PSK2		F4562000	
0003A2	D200 03E5 8003 003E5 00003				PCIO+3(1),TANKSRCB		F4564000	
	2420				PICK UP CARRIAGE CONTROL INFO		F4566000	
0003A8	9244 03E3	003E3			HVC		F4568000	
	2422				RESET CONTROL OPCODE		F4570000	
0003AC	9120 03E5	003E5			HVI		F4572000	
	2423				CK FOR SKIP IMMEDIATE		F4574000	
0003B0	4710 03B8	003B8			PCIO+3,PSK1H		F4576000	
	2424				IF YES GO AROUND DELAY SETTING		F4578000	
0003B4	9602 03E3	003E3			BO PSK1H		F4580000	
	2425				SET SKIP AFTER PRINT 44=46		F4582000	
0003B8	9110 03E5	003E5			PCIO+1,X102'		F4584000	
	2426				CK FOR SKIP NOT SPACE		F4586000	
0003BC	4780 03C4	003C4			PCIO+3,X110'		F4590000	
	2427				IF OFF SPACE		F4592000	
0003C0	9601 03E3	003E3			PCIO+1,X101'		F4594000	
	2428				SET SKIP 44=45, 46=47		F4596000	
0003C4	4A80 1316	01316			PCIO+1,X101'		F4598000	
	2429				IF SO SKIP OVER CARRIAGE CONTROL		F4599000	
0003C8	4080 03PC	003PC			PCIO+1,X101'		F4599000	
	2430				PREPARE FOR WAITING		F4599000	
0003CC	9601 03F9	003F9			PCIO+1,X101'		F4599000	
	2431				PERFORM CARRIAGE CONTROL OPERATION		F4599000	
0003D0	913P 03E5	003E5			PCIO+1,X101'		F4599000	
	2432				SAVE ADDRESS IN XIO INST		F4599000	
0003D4	4780 03F4	003F4			PCIO+1,X101'		F4599000	
	2433				SPACE SUPPRESS BIT ON		F4599000	
0003D8	94FE 03FB	003FB			PCIO+1,X101'		F4599000	
	2434				DO 42 SPACE SUPPRESS		F4599000	
0003E6	4770 00B0	000B0			PCIO+1,X101'		F4599000	
	2435				IF 42 SPACE SUPPRESS OFF		F4599000	
	2436				PCIO		F4599000	
	2437				PCIO		F4599000	
	2438				PCIO		F4599000	
	2439				PCIO		F4599000	
	2440				PCIO		F4599000	
	2441				PCIO		F4599000	
	2442				PCIO		F4599000	
	2443				PCIO		F4599000	
	2444				PCIO		F4599000	
	2445				PCIO		F4599000	
	2446				PCIO		F4599000	
	2447				PCIO		F4599000	
	2448				PCIO		F4599000	
	2449				PCIO		F4599000	
	2450				PCIO		F4599000	
	2451				PCIO		F4599000	
	2452				PCIO		F4599000	
	2453				PCIO		F4599000	
	2454				PCIO		F4599000	
	2455				PCIO		F4599000	
	2456				PCIO		F4599000	
	2457				PCIO		F4599000	
	2458				PCIO		F4599000	
	2459				PCIO		F4599000	
	2460				PCIO		F4599000	
	2461				PCIO		F4599000	
	2462				PCIO		F4599000	
	2463				PCIO		F4599000	
	2464				PCIO		F4599000	
	2465				PCIO		F4599000	
	2466				PCIO		F4599000	
	2467				PCIO		F4599000	
	2468				PCIO		F4599000	
	2469				PCIO		F4599000	
	2470				PCIO		F4599000	
	2471				PCIO		F4599000	
	2472				PCIO		F4599000	
	2473				PCIO		F4599000	
	2474				PCIO		F4599000	
	2475				PCIO		F4599000	
	2476				PCIO		F4599000	
	2477				PCIO		F4599000	
	2478				PCIO		F4599000	
	2479				PCIO		F4599000	
	2480				PCIO		F4599000	
	2481				PCIO		F4599000	
	2482				PCIO		F4599000	
	2483				PCIO		F4599000	
	2484				PCIO		F4599000	
	2485				PCIO		F4599000	
	2486				PCIO		F4599000	
	2487				PCIO		F4599000	
	2488				PCIO		F4599000	
	2489				PCIO		F4599000	
	2490				PCIO		F4599000	
	2491				PCIO		F4599000	
	2492				PCIO		F4599000	
	2493				PCIO		F4599000	
	2494				PCIO		F4599000	
	2495				PCIO		F4599000	
	2496				PCIO		F4599000	
	2497				PCIO		F4599000	
	2498				PCIO		F4599000	
	2499				PCIO		F4599000	
	2500				PCIO		F4599000	

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
				2485	EQUATES FOR PRINT PROCESSOR		
				2486			F4624000
000020				2487	PSKINH EQU X'20'		F4626000
				2488	AIF (CHACHINE EQ 20).PSRG		F4628000
				2489	.PSRG ANOP		F4630000
000084				2490	PCT EQU 132		F4642000
0003FE				2491	PCTCCWCT EQU PCTCCW+4		F4644000
000080				2492	PCTPTN EQU SPCOMM1+4		F4646000
				2493	.PRTNSKP ANOP		F4648000
				2494	(ENUNDR EQ 0).RTNSKP		F4650000
							F4652000

LOC	OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	2150CT70	11/21/72
2496	EA				SETA 0		F4656000
2497	*						F4658000
2498	*				INPUT SERVICE PROCESSOR		F4660000
2499	*						F4662000
2500	*				GENERATION LOGIC VARIABLE HEAVINGS		F4664000
2501	*				ER(1) = 0 FOR 1442,2501,2540,2540,2560 READ DEVICES		F4666000
2502	*				ER(2) = 0 FOR 2520 READ/PUNCH DEVICES		F4668000
2503	*				ER(3) = 0 FOR 1442 READ/PUNCH DEVICES		F4670000
2504	*				ER(6) = 0 FOR MOD 20		F4672000
2505	*				ER(7) = 0 FOR 2560 READ/PUNCH DEVICES		F4674000
2506	*				AIP (CNUMBER EQ 1).RRTN1	1+2+3+6+7	F4676000
2507	.RRTN1				(ER(7)).RRTN2		F4680000
2508	.RRTN2				ANOP	1+2+3+6+7	F4684000
2509	.RRTN1				NULL	INITIAL ENTRY AT IPL TIME	F4686000
2511	RDSTART				DS	ENTRY AFTER EOF, LOOP FOR DUAL PUNCH	F4688000
2512	*				AIF (ER(2) AND ER(3) OR NOT ER(6)).RRTN18		F4690000
2513	.RRTN18				ANOP		F4694000
2514	READ1				SPREAD R, RCTDTA1	PERFORM THE INITIAL READ	F4696000
2522	RCK1				SCHCK R, RDERR1, RDEOP1	MAKE SURE IN OK	F4698000
2534	*				AIF (ER(2) AND ER(3) OR ER(1)).RRTN3	(2+3)*1	F4700000
2535	.RRTN3				AIF (ER(2) AND ER(3)).RRTN4	2+3	F4706000
2536	.RRTN4				AIF (ER(2) OR ER(3)).RRTN5		F4712000
2537	.RRTN5				AIF (ER(2) OR NOT ER(6)).RRTN6	2*-6	F4718000
2538	.RRTN6				ANOP	1+2+3+6+7	F4724000
2539	ROPEN				SLA	LOCATE TANK IN PARAMETER REG	F4726000
2541	*				AIP (CNUMBER EQ 1).RHONE		F4728000
2542	*				BAS R14, STPOPEN	REQUEST HASP TO RECEIVE STREAM	F4730000
2546	*				BZ RREOPEN	IF NOT SENT TO HASP WAIT	F4732000
00045C	4780 0522		00522		AIF (CLOCCH EQ 0).RRTN7A		F4734000
2547	*				AIF (CLOCCH EQ 20).RRTN7		F4738000
2548	.RRTN7A				AIP	-(1+2+3)	F4748000
2549	.RRTN7				ANOP		F4750000
2550	*				SDELAY R, TIME=LONG, TYPE=BRANCH WAIT FOR HASP TO RESPOND		F4752000
2555	.RRTN8				AIF (CLOCCH EQ 0).RRTN8A		F4756000
2556	.RRTN8A				ANOP		F4758000
2557	*				NE MUST GO BACK TO COMMUTATOR FOR GATE TO BE OPENED		F4760000
2558	.RHONE				ANOP		F4762000
2559	RDLOOP				DS	BASIC READ LOOP	F4764000
2560	*				SPREAD R, RCTDTA2	READ A CARD	F4766000
00047E	D201 00F6 131A 000F6 0131A				HVC RCTCT1, H'80	SET LENGTH INTO TANK COUNT	F4768000
2569	*				SPUT R, RCTTANK1	SEND PREVIOUS TANK DATA TO HASP	F4770000
2581	*				SCHCK R, RDERR, RDEOP	CHECK FOR CARD IN OK	F4772000
2593	*				SPREAD R, RCTDTA1	READ A CARD	F4774000
2601	*				HVC RCTCT2, H'80	SET LENGTH INTO TANK COUNT	F4776000
2602	*				SPUT R, RCTTANK2	SEND PREVIOUS TANK DATA TO HASP	F4778000
2614	BCHECK				DS	REENTRY AFTER ERRORS	F4780000
2615	*				SCHCK R, RDERR, RDEOP	CHECK FOR CARD IN OK	F4782000
2627	*				B RDLOOP	IF SO CONTINUE TO READ CARDS	F4784000
2628	RDEOP				HVC RCTCT1, F'0	SET END OF FILE INDICATOR	F4786000
0004EE	D201 00F6 1308 000F6 01308				SDELAY R, TYPE=SETUP	PREPARE FOR REJECT ON SENDING	F4788000
2632	*				SLA R8, RCTTANK1	PUT TANK ADDR IN PARAMETER REG	F4790000
2634	*				BAS R14, STPPUT	SEND TO HASP EOF SIGNAL	F4792000
2638	*				BZ RCTRN	IF NOT PREPARED FOR SEND WAIT BETRY	F4794000
2639	*				AIP (ER(2) AND ER(3)).RRTN9	2+3	F4800000
000502	4780 0084		00084		AIP (CNUMBER EQ 20).RRTN10	-(6+7)	F4814000
2641	.RRTN10				AIP (ER(7)).RRTN14		

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
				2642	RRTN10 ANOP	F4820000
				2643	RRTN15 ANOP	F4822000
000506	47F0 0432	00432		2644	SINTREQ R,RDR	F4824000
				2645	BDERR	F4826000
				2646	\$READ R, RCTTDTAT	F4828000
00051E	47F0 04D8	004D8		2647	B RCHECK	F4830000
				2648	RDSTART	F4832000
				2649	RDSTART	F4834000
				2650	RDSTART	F4836000
				2651	RDERR1	F4838000
				2652	RDERR1	F4840000
				2653	RDERR1	F4842000
				2654	RDERR1	F4844000
				2655	RDERR1	F4846000
				2656	RDERR1	F4848000
				2657	RDERR1	F4850000
				2658	RDERR1	F4852000
				2659	RDERR1	F4854000
				2660	RDERR1	F4856000
				2661	RDERR1	F4858000
				2662	RDERR1	F4860000
				2663	RDERR1	F4862000
				2664	RDERR1	F4864000
				2665	RDERR1	F4866000
				2666	RDERR1	F4868000
				2667	RDERR1	F4870000
				2668	RDERR1	F4872000
				2669	RDERR1	F4874000
				2670	RDERR1	F4876000
				2671	RDERR1	F4878000
				2672	RDERR1	F4880000
				2673	RDERR1	F4882000
				2674	RDERR1	F4884000
				2675	RDERR1	F4886000
				2676	RDERR1	F4888000
				2677	RDERR1	F4890000
				2678	RDERR1	F4892000
				2679	RDERR1	F4894000
				2680	RDERR1	F4896000
				2681	RDERR1	F4898000
				2682	RDERR1	F4900000
				2683	RDERR1	F4902000
				2684	RDERR1	F4904000
				2685	RDERR1	F4906000
				2686	RDERR1	F4908000
				2687	RDERR1	F4910000
				2688	RDERR1	F4912000
				2689	RDERR1	F4914000
				2690	RDERR1	F4916000
				2691	RDERR1	F4918000
				2692	RDERR1	F4920000
				2693	RDERR1	F4922000
				2694	RDERR1	F4924000
				2695	RDERR1	F4926000
				2696	RDERR1	F4928000
				2697	RDERR1	F4930000
				2698	RDERR1	F4932000
				2699	RDERR1	F4934000
				2700	RDERR1	F4936000
				2701	RDERR1	F4938000
				2702	RDERR1	F4940000
				2703	RDERR1	F4942000
				2704	RDERR1	F4944000
				2705	RDERR1	F4946000
				2706	RDERR1	F4948000
				2707	RDERR1	F4950000
				2708	RDERR1	F4952000
				2709	RDERR1	F4954000
				2710	RDERR1	F4956000
				2711	RDERR1	F4958000
				2712	RDERR1	F4960000
				2713	RDERR1	F4962000
				2714	RDERR1	F4964000
				2715	RDERR1	F4966000
				2716	RDERR1	F4968000
				2717	RDERR1	F4970000
				2718	RDERR1	F4972000
				2719	RDERR1	F4974000
				2720	RDERR1	F4976000
				2721	RDERR1	F4978000
				2722	RDERR1	F4980000
				2723	RDERR1	F4982000
				2724	RDERR1	F4984000
				2725	RDERR1	F4986000
				2726	RDERR1	F4988000
				2727	RDERR1	F4990000
				2728	RDERR1	F4992000
				2729	RDERR1	F4994000
				2730	RDERR1	F4996000
				2731	RDERR1	F4998000
				2732	RDERR1	F5000000
				2733	RDERR1	F5002000
				2734	RDERR1	F5004000
				2735	RDERR1	F5006000
				2736	RDERR1	F5008000
				2737	RDERR1	F5010000
				2738	RDERR1	F5012000
				2739	RDERR1	F5014000
				2740	RDERR1	F5016000
				2741	RDERR1	F5018000
				2742	RDERR1	F5020000
				2743	RDERR1	F5022000
				2744	RDERR1	F5024000
				2745	RDERR1	F5026000
				2746	RDERR1	F5028000
				2747	RDERR1	F5030000
				2748	RDERR1	F5032000
				2749	RDERR1	F5034000
				2750	RDERR1	F5036000
				2751	RDERR1	F5038000
				2752	RDERR1	F5040000
				2753	RDERR1	F5042000
				2754	RDERR1	F5044000
				2755	RDERR1	F5046000
				2756	RDERR1	F5048000
				2757	RDERR1	F5050000
				2758	RDERR1	F5052000
				2759	RDERR1	F5054000
				2760	RDERR1	F5056000
				2761	RDERR1	F5058000
				2762	RDERR1	F5060000
				2763	RDERR1	F5062000
				2764	RDERR1	F5064000
				2765	RDERR1	F5066000
				2766	RDERR1	F5068000
				2767	RDERR1	F5070000
				2768	RDERR1	F5072000
				2769	RDERR1	F5074000
				2770	RDERR1	F5076000
				2771	RDERR1	F5078000
				2772	RDERR1	F5080000
				2773	RDERR1	F5082000
				2774	RDERR1	F5084000
				2775	RDERR1	F5086000
				2776	RDERR1	F5088000
				2777	RDERR1	F5090000
				2778	RDERR1	F5092000
				2779	RDERR1	F5094000
				2780	RDERR1	F5096000
				2781	RDERR1	F5098000
				2782	RDERR1	F5100000
				2783	RDERR1	F5102000
				2784	RDERR1	F5104000
				2785	RDERR1	F5106000
				2786	RDERR1	F5108000
				2787	RDERR1	F5110000
				2788	RDERR1	F5112000
				2789	RDERR1	F5114000
				2790	RDERR1	F5116000
				2791	RDERR1	F5118000
				2792	RDERR1	F5120000
				2793	RDERR1	F5122000
				2794	RDERR1	F5124000
				2795	RDERR1	F5126000
				2796	RDERR1	F5128000
				2797	RDERR1	F5130000
				2798	RDERR1	F5132000
				2799	RDERR1	F5134000
				2800	RDERR1	F5136000
				2801	RDERR1	F5138000
				2802	RDERR1	F5140000
				2803	RDERR1	F5142000
				2804	RDERR1	F5144000
				2805	RDERR1	F5146000
				2806	RDERR1	F5148000
				2807	RDERR1	F5150000
				2808	RDERR1	F5152000
				2809	RDERR1	F5154000
				2810	RDERR1	F5156000
				2811	RDERR1	F5158000
				2812	RDERR1	F5160000
				2813	RDERR1	F5162000
				2814	RDERR1	F5164000
				2815	RDERR1	F5166000
				2816	RDERR1	F5168000
				2817	RDERR1	F5170000
				2818	RDERR1	F5172000
				2819	RDERR1	F5174000
				2820	RDERR1	F5176000
				2821	RDERR1	F5178000
				2822	RDERR1	F5180000
				2823	RDERR1	F5182000
				2824	RDERR1	F5184000
				2825	RDERR1	F5186000
				2826	RDERR1	F5188000
				2827	RDERR1	F5190000
				2828	RDERR1	F5192000
				2829	RDERR1	F5194000
				2830	RDERR1	F5196000
				2831	RDERR1	F5198000
				2832	RDERR1	F5200000
				2833	RDERR1	F5202000
				2834	RDERR1	F5204000
				2835	RDERR1	F5206000
				2836	RDERR1	F5208000
				2837	RDERR1	F5210000
				2838	RDERR1	F5212000
				2839	RDERR1	F5214000
				2840	RDERR1	F5216000
				2841	RDERR1	F5218000
				2842	RDERR1	F5220000
				2843	RDERR1	F5222000
				2844	RDERR1	F5224000
				2845	RDERR1	F5226000
				2846	RDERR1	F5228000
				2847	RDERR1	F5230000
				2848	RDERR1	F5232000
				2849	RDERR1	F5234000
				2850	RDERR1	F5236000
				2851	RDERR1	F5238000
				2852	RDERR1	F5240000
				2853	RDERR1	F5242000
				2854	RDERR1	F5244000
				2855	RDERR1	F5246000
				2856	RDERR1	F5248000
				2857	RDERR1	F5250000
				2858	RDERR1	F5252000
				2859	RDERR1	F5254000
				2860	RDERR1	F5256000
				2861	RDERR1	F5258000
				2862	RDERR1	F5260000
				2863	RDERR1	F5262000
				2864	RDERR1	F5264000
				2865	RDERR1	F5266000
				2866	RDERR1	F5268000
				2867	RDERR1	F5270000
				2868	RDERR1	F5272000
				2869	RDERR1	F5274000
				2870	RDERR1	F5276000
				2871	RDERR1	F5278000
				2872	RDERR1	F5280000
				2873	RDERR1	F5282000
				2874	RDERR1	F5284000
				2875	RDERR1	F5286000
				2876	RDERR1	F5288000
				2877	RDERR1	F5290000
				2878	RDERR1	F5292000
				2879	RDERR1	F5294000



LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	F150CT70	11/21/72
	2695 6A			SETA 0			
	2696 *						P5000000
	2697 *			PUNCH SERVICE PROCESSOR			P5002000
	2698 *						P5004000
	2699 *						P5006000
	2700 *			GENERATION LOGIC VARIABLE HEADINGS			P5008000
	2701 *			ER(2) = 0 FOR 2520 READ/PUNCH DEVICES			P5010000
	2702 *			ER(3) = 0 FOR 1442 READ/PUNCH DEVICES			P5012000
	2703 *			ER(4) = 0 FOR 2540 PUNCH DEVICES			P5014000
	2704 *			ER(5) = 0 FOR 2520, 2560 PUNCH DEVICES			P5016000
	2705 *			ER(6) = 0 FOR MOD 20			P5018000
	2706 *			ER(7) = 0 FOR 2560 READ/PUNCH DEVICES			P5020000
	2707 *			ER(9) = 0 FOR 1442 SINGLE POCKET PUNCH DEVICES			P5022000
	2708 *			USING TANKDSEC, R8			P5024000
	2709 *			AIF (6NUMPUN EQ 1).URTN1			P5026000
	2710 *			ANOP			P5030000
	2711 *			NULL			P5032000
	2712 *			DS OH			P5034000
	2713 *			USRTN1			P5036000
	2714 *			USRTN2			P5038000
	2715 *			USRTN3			P5040000
	2716 *			USRTN4			P5042000
	2717 *			USRTN5			P5044000
	2718 *			USRTN6			P5046000
	2719 *			USRTN7			P5048000
	2720 *			USRTN8			P5050000
	2721 *			USRTN9			P5052000
	2722 *			USRTN10			P5054000
	2723 *			USRTN11			P5056000
	2724 *			USRTN12			P5058000
	2725 *			USRTN13			P5060000
	2726 *			USRTN14			P5062000
	2727 *			USRTN15			P5064000
	2728 *			USRTN16			P5066000
	2729 *			USRTN17			P5068000
	2730 *			USRTN18			P5070000
	2731 *			USRTN19			P5072000
	2732 *			USRTN20			P5074000
	2733 *			USRTN21			P5076000
	2734 *			USRTN22			P5078000
	2735 *			USRTN23			P5080000
	2736 *			USRTN24			P5082000
	2737 *			USRTN25			P5084000
	2738 *			USRTN26			P5086000
	2739 *			USRTN27			P5088000
	2740 *			USRTN28			P5090000
	2741 *			USRTN29			P5092000
	2742 *			USRTN30			P5094000
	2743 *			USRTN31			P5096000
	2744 *			USRTN32			P5098000
	2745 *			USRTN33			P5100000
	2746 *			USRTN34			P5102000
	2747 *			USRTN35			P5104000
	2748 *			USRTN36			P5106000
	2749 *			USRTN37			P5108000
	2750 *			USRTN38			P5110000
	2751 *			USRTN39			P5112000
	2752 *			USRTN40			P5114000
	2753 *			USRTN41			P5116000
	2754 *			USRTN42			P5118000
	2755 *			USRTN43			P5120000
	2756 *			USRTN44			P5122000
	2757 *			USRTN45			P5124000
	2758 *			USRTN46			P5126000
	2759 *			USRTN47			P5128000
	2760 *			USRTN48			P5130000
	2761 *			USRTN49			P5132000
	2762 *			USRTN50			P5134000
	2763 *			USRTN51			P5136000
	2764 *			USRTN52			P5138000
	2765 *			USRTN53			P5140000
	2766 *			USRTN54			P5142000
	2767 *			USRTN55			P5144000
	2768 *			USRTN56			P5146000
	2769 *			USRTN57			P5148000
	2770 *			USRTN58			P5150000
	2771 *			USRTN59			P5152000
	2772 *			USRTN60			P5154000
	2773 *			USRTN61			P5156000
	2774 *			USRTN62			P5158000
	2775 *			USRTN63			P5160000
	2776 *			USRTN64			P5162000
	2777 *			USRTN65			P5164000
	2778 *			USRTN66			P5166000
	2779 *			USRTN67			P5168000
	2780 *			USRTN68			P5170000
	2781 *			USRTN69			P5172000
	2782 *			USRTN70			P5174000
	2783 *			USRTN71			P5176000
	2784 *			USRTN72			P5178000
	2785 *			USRTN73			P5180000
	2786 *			USRTN74			P5182000
	2787 *			USRTN75			P5184000
	2788 *			USRTN76			P5186000
	2789 *			USRTN77			P5188000
	2790 *			USRTN78			P5190000
	2791 *			USRTN79			P5192000
	2792 *			USRTN80			P5194000
	2793 *			USRTN81			P5196000
	2794 *			USRTN82			P5198000
	2795 *			USRTN83			P5200000
	2796 *			USRTN84			P5202000
	2797 *			USRTN85			P5204000
	2798 *			USRTN86			P5206000
	2799 *			USRTN87			P5208000
	2800 *			USRTN88			P5210000
	2801 *			USRTN89			P5212000
	2802 *			USRTN90			P5214000
	2803 *			USRTN91			P5216000
	2804 *			USRTN92			P5218000
	2805 *			USRTN93			P5220000
	2806 *			USRTN94			P5222000
	2807 *			USRTN95			P5224000
	2808 *			USRTN96			P5226000
	2809 *			USRTN97			P5228000
	2810 *			USRTN98			P5230000
	2811 *			USRTN99			P5232000
	2812 *			USRTN100			P5234000
	2813 *			USRTN101			P5236000
	2814 *			USRTN102			P5238000
	2815 *			USRTN103			P5240000
	2816 *			USRTN104			P5242000
	2817 *			USRTN105			P5244000
	2818 *			USRTN106			P5246000
	2819 *			USRTN107			P5248000
	2820 *			USRTN108			P5250000
	2821 *			USRTN109			P5252000
	2822 *			USRTN110			P5254000
	2823 *			USRTN111			P5256000
	2824 *			USRTN112			P5258000
	2825 *			USRTN113			P5260000
	2826 *			USRTN114			P5262000
	2827 *			USRTN115			P5264000
	2828 *			USRTN116			P5266000
	2829 *			USRTN117			P5268000
	2830 *			USRTN118			P5270000
	2831 *			USRTN119			P5272000
	2832 *			USRTN120			P5274000
	2833 *			USRTN121			P5276000
	2834 *			USRTN122			P5278000
	2835 *			USRTN123			P5280000
	2836 *			USRTN124			P5282000
	2837 *			USRTN125			P5284000
	2838 *			USRTN126			P5286000
	2839 *			USRTN127			P5288000
	2840 *			USRTN128			P5290000
	2841 *			USRTN129			P5292000
	2842 *			USRTN130			P5294000
	2843 *			USRTN131			P5296000
	2844 *			USRTN132			P5298000
	2845 *			USRTN133			P5300000
	2846 *			USRTN134			P5302000
	2847 *			USRTN135			P5304000
	2848 *			USRTN136			P5306000
	2849 *			USRTN137			P5308000
	2850 *			USRTN138			P5310000
	2851 *			USRTN139			P5312000
	2852 *			USRTN140			P5314000
	2853 *			USRTN141			P5316000
	2854 *			USRTN142			P5318000
	2855 *			USRTN143			P5320000
	2856 *			USRTN144			P5322000
	2857 *			USRTN145			P5324000
	2858 *			USRTN146			P5326000
	2859 *			USRTN147			P5328000
	2860 *			USRTN148			P5330000
	2861 *			USRTN149			P5332000
	2862 *			USRTN150			P5334000
	2863 *			USRTN151			P5336000
	2864 *			USRTN152			P5338000
	2865 *			USRTN153			P5340000
	2866 *			USRTN154			P5342000
	2867 *			USRTN155			P5344000
	2868 *			USRTN156			P5346000
	2869 *			USRTN157			P5348000
	2870 *			USRTN158			P5350000
	2871 *			USRTN159			P5352000
	2872 *			USRTN160			P5354000
	2873 *			USRTN161			P5356000
	2874 *			USRTN162			P5358000
	2875 *			USRTN163			P5360000
	2876 *			USRTN164			P5362000
	2877 *			USRTN165			P5364000
	2878 *			USRTN166			P5366000
	2879 *			USRTN167			P5368000
	2880 *			USRTN168			P5370000
	2881 *			USRTN169			P5372000
	2882 *			USRTN170			P5374000
	2883 *			USRTN171			P5376000
	2884 *			USRTN172			P5378000
	2885 *			USRTN173			P5380000
	2886 *			USRTN174			P5382000
	2887 *			USRTN175			P5384000
	2888 *			USRTN176			P5386000
	2889 *			USRTN177			P5388000
	2890 *			USRTN178			P5390000
	2891 *			USRTN179			P5392000
	2892 *			USRTN180			P5394000
	2893 *			USRTN181			P5396000
	2894 *			USRTN182			P5398000
	2895 *			USRTN183			P5400000
	2896 *			USRTN184			P5402000
	2897 *			USRTN185			P5404000
	2898 *			USRTN186			P5406000
	2899 *			USRTN187			P5408000
	2900 *			USRTN188			P5410000
	2901 *			USRTN189			P5412000
	2902 *			USRTN190			P5414000
	2903 *			USRTN191			P5416000
	2904 *			USRTN192			P5418000
	2905 *			USRTN193			P5420000
</							



LOC	OBJECT CODE	ADDR1	ADDR2	SIZE	SOURCE STATEMENT	PC
2798 *					3POT ROUTINE	F5786000
2799 *					INTERFACE WITH STPPUT	F5788000
2800 *						F5790000
2801 EA					SETA 0	F5792000
2802 OXDM					DSECT (SHACHINE EQ 20).OXB	F5794000
2803					AIF	F5796000
2804 .OXB					ANOP	F5802000
2805 OXTHK					DS H	F5804000
2806 OXTC					DS H	F5806000
2807 OXBADRET					DS 2H	F5808000
2808 OXGDRET					DS 2H	F5810000
2809 .OXAR					ANOP	F5812000
2810 HASPRT					CSECT	F5814000
2811					USING OXDM,R14	F5816000
2812					USING TANMSEC,RB	F5818000
2813					AIF (SHACHINE EQ 20).OX1	F5820000
2814 .OX1					ANOP	F5836000
2815 *					R14 POINTS TO USER CALLING SEQ WITH TANK AND TCT ADDRESS	F5838000
2816					USING TCTDSECT,R9	F5840000
2817 SPOT					NULL	F5842000
2818 *SPUT					DS OH	F5844000
2819					AS R14,=H'4'	F5846000
2820					STH R14,OXSAV	F5848000
2821					LH R8,OXTHK	F5850000
2822					LH R9,OXTC	F5852000
2823 .OX1					AIF (CONSOLE EQ 0).OX2	F5854000
2824 .OX2					ANOP	F5856000
2825 OXPUT					BAS	F5906000
2826 *OXPUT					DS OH	F5908000
2827+					DC X'4D'	
2828+					DC AL1(R14*16)	
2829+					DC S(STPPUT)	
2830					LOAD R14,OXSAV	
2831+					LH R14,OXSAV	
2832					AIF (SHACHINE EQ 20).OX7	F5910000
2833					ANOP	F5912000
2834 .OX7					ANOP	F5914000
2835					DNE OXGDRET	F5916000
2836					AIF (CONSOLE EQ 0).OX8	F5918000
2837 .OX8					AIF (SHACHINE EQ 20).OX9	F5920000
2838 .OX9					ANOP	F5922000
2839					B OXBADRET	F5946000
2840 OXSAV					DC H'0'	F5948000
2841 SPUTA					STH R14,OXSAV	F5950000
2842					LH R8,OXTHK	F5952000
2843					BAS R14,STPPUT	F5954000
2844					DC X'4D'	F5956000
2845+					DC AL1(R14*16)	
2846+					DC S(STPPUT)	
2847					LH R14,OXSAV	F5958000
2848					BE OXBADRET	F5960000
2849 .OX9					ANOP	F5962000
2850					B OXGDRET	F5964000
2851					DROP R14,RE	F5966000
2852					AIF (SHACHINE EQ 20).OXC	F5968000

LCC OBJECT CODE				ADDR1 ADDR2	STMT	SOURCE STATEMENT	P150C970	11/21/72
1								
2								
3					2853	DROP R9		
4					2854 .OXC	ANOP		F5970000
5					2855 AIP	(CACHINE EQ 20).OX50		F5972000
6					2856 .OX50	ANOP		F5975000
7					2857	SENDPROC 0		F6012000
8						END OF PUT ROUTINE		F6015000
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
000000				2859	USING LOGDSECT,R15		
				2860	NULL		F6018000
00061A				2861+\$LOG	DS		F6020000
				2862	OH		
00061A	40E0 0648			2863+	\$STO R14,LOG14SAV	SAVE R14	F6022000
				2864	\$STH R14,LOG14SAV	STORE RTH REG	
00061E	40P0 064A			2865+	\$STO R15,LOGRTN		F6024000
000622	48P0 0000			2866	LH R15,LOGRTN	PICK UP ERROR ENTRY OFFSET	F6026000
				2867	LH R15,010,R15)	ADD ERROR TABLE ORIGIN	F6028000
000626	4AF0 131E			2868+	\$AA R15,\$ERRTAB		
00062A	48E0 P002			2869	AH R15,\$ERRTAB	LOAD ERROR COUNT	F6030000
00062E	4AE0 1320			2870	LH R14,LOGCOUNT	UP COUNT BY ONE	F6032000
000632	40E0 P002			2871	AH R14,\$H.1	STORE NEW COUNT	F6034000
				2872	STH R14,LOGCOUNT		F6036000
				2873	AIP (\$TRACE EQ 0).LNOTRC		F6056000
				2874	AIP (\$CONSOLE EQ 0 AND \$PRCONS EQ 0).LOGNOT		F6089000
				2875	ANOP	RESTORE R14	F6090000
000636	48E0 0648			2876+LRTN	\$LOAD R14,LOG14SAV		
				2877	LH R14,LOG14SAV	PICK UP CALLER	F6092000
00063A	48P0 064A			2878+	\$LOAD R15,LOGRTN		
00063E	D203 00C4 1308			2879	LH R15,LOGRTN	ZERO OUT LOG INFO FOR NEXT LOG	F6094000
000644	47P0 P002			2880	HVC \$LOGINFO,=P.0	RETURN	F6096000
				2881	B 2(0,R15)		F6098000
000648	0000			2882+LOG14SAV	\$ACON Y(0)		
				2883	LOGRTN DC		F6100000
00064A	0000			2884+LOGRTN	\$ACON Y(0)		
				2885	LOGCLAS EQU \$LOGCLAS		F6102000
000000				2886	\$LOGCLAS EQU 0		
					DROP R15		F6104000

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
2888 *				2888 *	ENTRY - STPPUT		
2890 *				2890 *			F6108000
2891 *				2891 *			F6110000
2892 *				2892 *			F6112000
2893 *				2893 *			F6114000
2894 *				2894 *			F6116000
2895 *				2895 *			F6118000
2896 *				2896 *			F6120000
2897 *				2897 *			F6122000
2898	00064C			2898	OH		F6124000
2899				2899	STRACE SSH=YES		F6126000
2900+				2900+	\$STO R14,OSAVR14		F6128000
2901	00064C 4020 088E		0088E	2901	STH R14,OSAVR14		F6130000
2902	000650 40A0 098C		0088C	2902	STH R10,OSAVR10		F6132000
2903	000654 4090 088A		0088A	2903	STH R9,OSAVR9		F6134000
2904+				2904+	\$STO R8,0INADD		F6136000
2905	000658 4080 0890		00890	2905	STH R8,0INADD		F6138000
2906	00065C 48F0 1320		01320	2906	LH R15,H*1*		F6140000
2907+				2907+	SLOAD R10,0INADD		F6142000
2908	000660 48A0 0990		00890	2908	LH R10,0INADD		F6144000
2909	000664 4AA0 1322		01322	2909	AH R10,Y(TANKRCB-TANKDSEC) SKIP TO CTL BYTES		F6146000
2910	000668 4890 8004		00004	2910	USING TANKDSEC,R8		F6148000
2911	00066C 4990 1314		01314	2911	LH R9,TANKCNT		F6150000
2912	000670 4780 0786		00786	2912	CH R9,H*0*		F6152000
2913				2913	BE 0EOINPUT		F6154000
2914	000674 1A98			2914	AIF (EMPTYTYPE LE 1).ONCOMP TEST NONE OR TRAILING COMP		F6156000
2915				2915	AR R9,R8		F6158000
2916+				2916+	\$STO R9,0INEND		F6160000
2917	000676 4090 0892		00892	2917	STH R9,0INEND		F6162000
2918	00067A 9502 8006	00006		2918	CLI OTS(R8),2		F6164000
2919 *	00067E 4770 0694	00694		2919 *	BNE OGOA		F6166000
2920				2920	SKIP ATTEMPTING TO COMPRESS A TEXT CARD		F6168000
2921	000682 4890 8004	00004		2921	LH R9,TANKCNT		F6170000
2922+				2922+	SLTR R11,R8		F6172000
2923+	000686 1BE8			2923+	SR R11,R11		F6174000
2924	000688 1AB8			2924	AR R11,B8		F6176000
2925	00068A 1A89			2925	AR R8,R9		F6178000
2926	00068C 4A90 089A	0089A		2926	AH R9,0D200		F6180000
2927	000690 47F0 06C8	006C8		2927	B OSQUEEZE		F6182000
2928+OGOA				2928+OGOA	HULL		F6184000
2929	000694 9200 9006	00006		2929	OTS(R9),0		F6186000
2930				2930	SETUP ENDING CHARACTER		F6188000
2931	000698 9500 9005	00005		2931	AIF (EMPTYTYPE EQ 2).ONB8		F6190000
2932	00069C 4770 06A4	006A4		2932	OTS-1(R9),0		F6192000
2933	0006A0 92FF 9006	00006		2933	BNE *+8		
2934				2934	OTS(R9),255		
2935				2935	YES...USE ANOTHER		
2936	0006A4 D202 9007 9006 00007 00006			2936	OTS+1(6CCT-1,R9),OTS(R9) PROPAGATE FOR DUPLICATION		
2937				2937	OTS+1(8-1,B9),OTS(B9) PROPAGATE FOR DUPLICATION		
2938	0006AA			2938	HULL		
2939				2939	DS		
2940	0006AA 4820 1324	01324		2940	OH		
2941	0006AE 48D0 1326	01326		2941	SLA R14,OGO1		
					LH R14,Y(OGO1)		
					SLA R13,OSQUEEZE		
					LH R13,Y(OSQUEEZE)		

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	11/21/72
000682	4890 089A	0089A	2942	LH R9,OD200	INITIAL COUNTER FOR HVC	F6194000
000686	18BB		2943	SLTR R11,R8	INPUT AREA TO R11	F6196000
000688	1AB8		2944	SR R11,R11		
00068A			2945	AR R11,R8		
00068C			2946	NULL		
00068E			2947	DS		
000690			2948	DS 2947+OG01		
000692			2949	DS 2947+OG01		
000694			2950	DS 2947+OG01		
000696			2951	DS 2947+OG01		
000698			2952	DS 2947+OG01		
00069A			2953	DS 2947+OG01		
00069C			2954	DS 2947+OG01		
00069E			2955	DS 2947+OG01		
0006A0			2956	DS 2947+OG01		
0006A2			2957	DS 2947+OG01		
0006A4			2958	DS 2947+OG01		
0006A6			2959	DS 2947+OG01		
0006A8			2960	DS 2947+OG01		
0006AA			2961	DS 2947+OG01		
0006AC			2962	DS 2947+OG01		
0006AE			2963	DS 2947+OG01		
0006B0			2964	DS 2947+OG01		
0006B2			2965	DS 2947+OG01		
0006B4			2966	DS 2947+OG01		
0006B6			2967	DS 2947+OG01		
0006B8			2968	DS 2947+OG01		
0006BA			2969	DS 2947+OG01		
0006BC			2970	DS 2947+OG01		
0006BE			2971	DS 2947+OG01		
0006C0			2972	DS 2947+OG01		
0006C2			2973	DS 2947+OG01		
0006C4			2974	DS 2947+OG01		
0006C6			2975	DS 2947+OG01		
0006C8			2976	DS 2947+OG01		
0006CA			2977	DS 2947+OG01		
0006CC			2978	DS 2947+OG01		
0006CE			2979	DS 2947+OG01		
0006D0			2980	DS 2947+OG01		
0006D2			2981	DS 2947+OG01		
0006D4			2982	DS 2947+OG01		
0006D6			2983	DS 2947+OG01		
0006D8			2984	DS 2947+OG01		
0006DA			2985	DS 2947+OG01		
0006DC			2986	DS 2947+OG01		
0006DE			2987	DS 2947+OG01		
0006E0			2988	DS 2947+OG01		
0006E2			2989	DS 2947+OG01		
0006E4			2990	DS 2947+OG01		
0006E6			2991	DS 2947+OG01		
0006E8			2992	DS 2947+OG01		
0006EA			2993	DS 2947+OG01		
0006EC			2994	DS 2947+OG01		
0006EE			2995	DS 2947+OG01		
0006F0			2996	DS 2947+OG01		
0006F2			2997	DS 2947+OG01		
0006F4			2998	DS 2947+OG01		
0006F6			2999	DS 2947+OG01		
0006F8			3000	DS 2947+OG01		
0006FA			3001	DS 2947+OG01		
0006FC			3002	DS 2947+OG01		
0006FE			3003	DS 2947+OG01		
000700			3004	DS 2947+OG01		
000702			3005	DS 2947+OG01		
000704			3006	DS 2947+OG01		
000706			3007	DS 2947+OG01		
000708			3008	DS 2947+OG01		
00070A			3009	DS 2947+OG01		
00070C			3010	DS 2947+OG01		
00070E			3011	DS 2947+OG01		
000710			3012	DS 2947+OG01		
000712			3013	DS 2947+OG01		
000714			3014	DS 2947+OG01		
000716			3015	DS 2947+OG01		
000718			3016	DS 2947+OG01		
00071A			3017	DS 2947+OG01		
00071C			3018	DS 2947+OG01		
00071E			3019	DS 2947+OG01		
000720			3020	DS 2947+OG01		
000722			3021	DS 2947+OG01		
000724			3022	DS 2947+OG01		
000726			3023	DS 2947+OG01		
000728			3024	DS 2947+OG01		
00072A			3025	DS 2947+OG01		
00072C			3026	DS 2947+OG01		
00072E			3027	DS 2947+OG01		
000730			3028	DS 2947+OG01		
000732			3029	DS 2947+OG01		
000734			3030	DS 2947+OG01		
000736			3031	DS 2947+OG01		
000738			3032	DS 2947+OG01		
00073A			3033	DS 2947+OG01		
00073C			3034	DS 2947+OG01		
00073E			3035	DS 2947+OG01		
000740			3036	DS 2947+OG01		
000742			3037	DS 2947+OG01		
000744			3038	DS 2947+OG01		
000746			3039	DS 2947+OG01		
000748			3040	DS 2947+OG01		
00074A			3041	DS 2947+OG01		
00074C			3042	DS 2947+OG01		
00074E			3043	DS 2947+OG01		
000750			3044	DS 2947+OG01		
000752			3045	DS 2947+OG01		
000754			3046	DS 2947+OG01		
000756			3047	DS 2947+OG01		
000758			3048	DS 2947+OG01		
00075A			3049	DS 2947+OG01		
00075C			3050	DS 2947+OG01		
00075E			3051	DS 2947+OG01		
000760			3052	DS 2947+OG01		
000762			3053	DS 2947+OG01		
000764			3054	DS 2947+OG01		
000766			3055	DS 2947+OG01		
000768			3056	DS 2947+OG01		
00076A			3057	DS 2947+OG01		
00076C			3058	DS 2947+OG01		
00076E			3059	DS 2947+OG01		
000770			3060	DS 2947+OG01		
000772			3061	DS 2947+OG01		
000774			3062	DS 2947+OG01		
000776			3063	DS 2947+OG01		
000778			3064	DS 2947+OG01		
00077A			3065	DS 2947+OG01		
00077C			3066	DS 2947+OG01		
00077E			3067	DS 2947+OG01		
000780			3068	DS 2947+OG01		
000782			3069	DS 2947+OG01		
000784			3070	DS 2947+OG01		
000786			3071	DS 2947+OG01		
000788			3072	DS 2947+OG01		
00078A			3073	DS 2947+OG01		
00078C			3074	DS 2947+OG01		
00078E			3075	DS 2947+OG01		
000790			3076	DS 2947+OG01		
000792			3077	DS 2947+OG01		
000794			3078	DS 2947+OG01		
000796			3079	DS 2947+OG01		
000798			3080	DS 2947+OG01		
00079A			3081	DS 2947+OG01		
00079C			3082	DS 2947+OG01		
00079E			3083	DS 2947+OG01		
0007A0			3084	DS 2947+OG01		
0007A2			3085	DS 2947+OG01		
0007A4			3086	DS 2947+OG01		
0007A6			3087	DS 2947+OG01		
0007A8			3088	DS 2947+OG01		
0007AA			3089	DS 2947+OG01		
0007AC			3090	DS 2947+OG01		
0007AE			3091	DS 2947+OG01		
0007B0			3092	DS 2947+OG01		
0007B2			3093	DS 2947+OG01		
0007B4			3094	DS 2947+OG01		
0007B6			3095	DS 2947+OG01		
0007B8			3096	DS 2947+OG01		
0007BA			3097	DS 2947+OG01		
0007BC			3098	DS 2947+OG01		
0007BE			3099	DS 2947+OG01		
0007C0			3100	DS 2947+OG01		
0007C2			3101	DS 2947+OG01		
0007C4			3102	DS 2947+OG01		
0007C6			3103	DS 2947+OG01		
0007C8			3104	DS 2947+OG01		
0007CA			3105	DS 2947+OG01		
0007CC			3106	DS 2947+OG01		
0007CE			3107	DS 2947+OG01		
0007D0			3108	DS 2947+OG01		
0007D2			3109	DS 2947+OG01		
0007D4			3110	DS 2947+OG01		
0007D6			3111	DS 2947+OG01		
0007D8			3112	DS 2947+OG01		
0007DA			3113	DS 2947+OG01		
0007DC			3114	DS 2947+OG01		
0007DE			3115	DS 2947+OG01		
0007E0			3116	DS 2947+OG01		
0007E2			3117	DS 2947+OG01		
0007E4			3118	DS 2947+OG01		
0007E6			3119	DS 2947+OG01		
0007E8			3120	DS 2947+OG01		
0007EA			3121	DS 2947+OG01		
0007EC			3122	DS 2947+OG01		
0007EE			3123	DS 2947+OG01		
0007F0			3124	DS 2947+OG01		
0007F2			3125	DS 2947+OG01		
0007F4			3126	DS 2947+OG01		
0007F6			3127	DS 2947+OG01		
0007F8			3128	DS 2947+OG01		
0007FA			3129	DS 2947+OG01		
0007FC			3130	DS 2947+OG01		
0007FE			3131	DS 2947+OG01		
000800			3132	DS 2947+OG01		
000802			3133	DS 2947+OG01		
000804			3134	DS 2947+OG01		
000806			3135	DS 2947+OG01		
000808			3136	DS 2947+OG01		
00080A			3137	DS 2947+OG01		
00080C			3138	DS 2947+OG01		
00080E			3139	DS 2947+OG01		
000810			3140	DS 2947+OG01		
000812			3141	DS 2947+OG01		
000814			3142	DS 2947+OG01		
000816			3143	DS 2947+OG01		
000818			3144	DS 2947+OG01		
00081A			3145	DS 2947+OG01		
00081C			3146	DS 2947+OG01		
00081E			3147	DS 2947+OG01		
000820			3148	DS 2947+OG01		
000822			3149	DS 2947+OG01		
000824			3150	DS 2947+OG01		
000826			3151	DS 2947+OG01		
000828			3152	DS 2947+OG01		
00082A			3153	DS 2947+OG01		
00082C			3154	DS 2947+OG01		
00082E			3155	DS 2947+OG01		

LCC	OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	R10	11/21/72
000714	07FE			2994	BR		Y150CT70
000716				2995	CHMPSTOP NULL		
000716	4990 132E			2996	CHMPSTOP DS	OH	CONTINUE (TO OCOMP1)
000716	4990 132E			2997	CH	R9,=H'31'	IDENTICAL STRING ENDED
000716	4990 132E			2998	BH	OBIGPROP	DOES IT EXCEED SCB...
000716	4990 132E			2999	STH	R9,STEP	BR IF YES
000722	3680 0249			3000	OI	STEP+1,X'80'	TO TEMPORARY STORAGE
000726	D200 A002 0249			3001	HVC	2(1,R10),STEP+1	SET SCB ALWAYS BIT
000726	D200 A002 0249			3002	AIF	(SCBTYPE EQ 2),ONB5	SET SCB
000726	D200 A002 0249			3003	CLI	(ECCT+OTS-1)(R8),C'	ARE WE SQUEEZING BLANKS
000726	D200 A002 0249			3004	BE	OBANK	ARE WE SQUEEZING BLANKS
000726	D200 A002 0249			3005	HVC	3(1,R10), (ECCT+OTS-1)(R8),C'	BR IF YES
000734	D200 A003 8009 00009			3006	HVC	3(1,R10), (4+OTS-1)(R8),C'	SET DUPLICATION CHAR
000734	D200 A003 8009 00009			3007	OI	2(R10),X'20'	SET DUPLICATION CHAR
00073E	1AAF			3008	AR	R10,R15	SHOW NON-BLANK DUPLICATION
000740				3009	ANOP		SKIP SAMPLE CHAR
000740				3010	OBANK		
000740	1AAF			3011	DS		
000742	4AB0 132C			3012	AR	R10,R15	COUNT SCB
000746	47F0 06AA			3013	AR	R8,Y(CCCT)	COUNT INPUT FIELD
00074A				3014	OBIGPROP NULL	R8,Y(4) COUNT INPUT FIELD	
00074A	929F A002			3015	OBIGPROP DS	OGO	AND CONTINUE RECORD
00074E	9540 8009			3016	HVI	2(R10),X'9F'	DUPLICATION COUNT EXCEEDS SCB
000752	4780 0762			3017	AIF	(SCBTYPE EQ 2),ONB6	SHOW MAX SCB
000756	D200 A003 8009 00003 00009			3018	CLI	(ECCT+OTS-1)(R8),C'	IS THIS BLANKS
00075C	9620 A002			3019	BE	(4+OTS-1)(R8),C'	IS THIS BLANKS
000760	1AAF			3020	HVC	3(1,R10), (ECCT+OTS-1)(R8),C'	BR IF YES
000762				3021	HVC	3(1,R10), (4+OTS-1)(R8),C'	SET SAMPLE CHAR
000762	1AAF			3022	OI	2(R10),X'20'	SHOW NON-BLANK
000762	4890 132E			3023	AR	R10,R15	COUNT SAMPLE
000762	4890 132E			3024	ANOP		
000762	4890 132E			3025	OBIGBLK NULL		
000762	4890 132E			3026	DS		
000762	4890 132E			3027	AR	R10,R15	EXCESSIVE COUNT BLANKS
000762	4890 132E			3028	SH	R9,=H'31'	COUNT SCB
000762	4890 132E			3029	B	OBIGSTOP	ADJUST COUNT
00076C				3030	OBIGMOVE NULL		AND TRY AGAIN
00076C	D23E A003 B006 00003 00006			3031	HVC	3(63,R10),OTS(R11)	STRING COUNT EXCEEDS SCB MAXIMUM
000772	92FF A002			3032	HVI	2(R10),X'2F'	MOVE MAX
000776	4AA0 1330			3033	AR	R10,=H'64'	SET MAX SCB
00077A	4AB0 1332			3034	AR	R11,=H'63'	COUNT STRING AND SCB
00077E	4B90 1332			3035	SH	R9,=H'63'	UPDATE FROM POINTER
000782	47F0 06CB			3036	B	OSQUEEZE	REDUCE COUNT
000782	47F0 06CB			3037	AGO	.OSKNCMP	AND TRY AGAIN
000782	47F0 06CB			3038	ANOP		
000782	47F0 06CB			3039	*		
000782	47F0 06CB			3040	*		
000786	9200 A002			3041	*		
00078A	1AAF			3042	OBIGINPUT HVI		END OF INPUT RECORD - TERMINATE AND ADD TO BUFFER
00078A	1AAF			3043	AR	2(R10),0	END-OF-RECORD SCB
00078A	1AAF			3043	AR	R10,R15	COUNT IT







LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	CONSTANT	ENTER FLOW
000872	48P0 1320		01320	3152	LH R15,=R:1'		
000882	48A0 8000		00000	3153	LH R10,TAKCHN	COMPRESSED COUNT	
000886	47F0 079A		0079A	3154	B ORERT		

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	F150C370	11/21/72
				3156 *			
				3157 *			
				3158 *			
				3159 *			
00088A	0000			3160 OSVR9	SACON 0		
				3161 OSVR9	DC Y(0)		
				3162 OSVR10	SACON 0		
00088C	0000			3163 OSVR10	DC Y(0)		
				3164 OSVR14	SACON 0		
00088E	0000			3165 OSVR14	DC Y(0)		
				3166 OINADD	SACON 0		
000890	0000			3167 OINADD	DC Y(0)		
				3168 OINEND	SACON 0		
000892	0000			3169 OINEND	DC Y(0)		
				3170 OACTBUF	SACON 0		
000894	0000			3171 OACTBUF	DC Y(0)		
				3172 OBUFTR	SACON 0		
000896	0000			3173 OBUFTR	DC Y(0)		
000898	0000			3174 OBUFCNT	DC H'0'		
00089A				3175 OD200	DS OH		
00089A	D200			3176	DC X'D200'		
00089C				3177 OD263	DS OH		
00089C	D23F			3178	DC X'D23F'		
000006				3179 OTS	EQU TANKDATA-TANKDSEC		
				3180	DROP R8		

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
				3182 *		F150CT70 11/23/72
				3183 *		F6642000
00089E				3184 STPGT	ENTERED FROM COMUTATOR	F6642000
00089E	9200 00A9	000A9		3185*STPGT		F6642000
				3186	OH STPGTCH+Y,0	F6642000
0008A2	48D0 1312			3187	SLA R13,STCT1	F6650000
000000		01312		3188+	LH R13,STCT1	F6676000
				3189	OSING TCTDSECT,R13	
0008A6				3190 GTEST	NULL *	
0008A6	9180 D005	00005		3191*GTEST	DS OH	F6678000
0008AA	4710 08BE			3192	TH TCTSTAT,TCTACT	F6680000
		008BE		3193	BO GSERVICE	F6682000
0008AE				3194 GNEXTTCT NULL	IS ACTION REQUESTED	F6684000
				3195*GNEXTTCT DS	BR IF YES	F6684000
0008AE	48D0 D000			3196	SLOAD R13,TCTNEXT	F6688000
		00000		3197+	LH R13,TCTNEXT	
0008B2	4AD0 1314			3198	SLTR R13,R13	F6688000
0008B6	4770 08A6	01314		3199+	AH R13,=H'0'	
		008A6		3200	BNZ GTEST	F6690000
				3201 *	BR IF NO	
				3202 *		F6692000
				3203 *	ALL TCT'S HAVE BEEN SERVICED...	F6694000
0008BA	47F0 00AC	000AC		3204 GVAIT	B STPGTCH+4	F6696000
					EXIT	F6698000
						F03.Y F6700000

LCC		OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	P150CT70	11/21/72
3206	*					SERVICE TCT WITH ACTION BIT ON	F6708000	
3207	*						F6706000	
3208	*						F6708000	
3209	GSERVICE NULL						F6710000	
3210	GSERVICE DS					ARE ANY BUFFERS AVAILABLE	F6712000	
3211	CLI	0000F	008CE			BR IF YES	F6718000	
3212	BNE					NO... TURN OFF ACTION	F6716000	
3213	GNOACT	00005				AND CONTINUE	F6718000	
3214	008AE					A BUFFER IS PRESENT	F6720000	
3215	GTTANK							
3216	GTTANK							
3217	0000C	0000D	0000C			ARE SUFFICIENT TANKS QUEUED	F6722000	
3218	008C6					BR IF YES	F6724000	
3219	*					A DECOMPRESSION IS REQUIRED	F6726000	
3220							F6728000	
3221	008EA	0024C				SDCHAIN STANKPOL,R10,MOEN8 GET A TANK		
3222	008EA					CLI STANKPOL,0		
3223	0024C					BE **14		
3224	00000					LH R10,STANKPOL		
3225	008EA	00000	0024C	A000		STANKPOL(2),0(R10)		
3226	00000					HVC STANKPOL(2),0(R10)		
3227	008EA	008EA				BR IF NONE	F6730000	
3228	0000A					USING TANKDSEC,R10		
3229	00002					SLOAD P8,TCTBUFER	F6732000	
3230	00002					LH R8,(TCTBUFER	F6734000	
3231	00A28					RR,(SUPCOUNT-BUEDECT),0(R8) TO DATA		
3232	00000	00002	00000			SAVE TANK ADDR.	F6736000	
3233	01320					MOVE RCB AND SRCB	F6740000	
3234	GDECOMP					CONSTANT FOR SPEED	F6742000	
3235	GDECOMP					PROCESS AN SCB	F6744000	
3236	0000A	00002	0091F	00002		SET SCB	F6746000	
3237	0091F					TURN OFF HIGH-BIT	F6748000	
3238	0097E					END-OF-RECORD	F6750000	
3239	0091F					IS THIS A CHAR STRING...	F6752000	
3240	00936					BR IF NOT	F6754000	
3241	0091F					TURN OFF STRING BIT	F6756000	
3242	00006	00006	00006			MOVE STRING (+1)	F6758000	
3243	GSCB					SCB AND COUNT	F6760000	
3244	0091E	0091E				GET MOVE COUNT	F6762000	
3245	0089A					REMOVE MOVE	F6764000	
3246	0092C	1A89				COUNT INPUT STRING	F6766000	
3247	0092E	1A89				COUNT OUTPUT STRING	F6768000	
3248	00930	1A8F				COUNT SCB	F6770000	
3249	00904					CONTINUE WITH RECORD	F6772000	
3250	GPROP					PROPAGATION REQUIRED	F6774000	
3251	GPROP							
3252	0091F	0091F				IS THIS BLANKS...	F6776000	
3253	00962					BR IF YES	F6778000	
3254	0091F					NO.. REMOVE INDICATOR	F6780000	
3255	00006	00006	00006			SET SAMPLE CHARACTER	F6782000	
3256	0091F	0091F	0091F			SET COUNT	F6784000	
3257	GHOV					TANKDATA+1(+--),TANKDATA PROPAGATE COUNT (+2)	F6786000	
3258	0091E	0091E				PROPAGATION COUNT	F6788000	
3259	0089A					LESS MOVE	F6790000	
3260	0095C	1A8F				COUNT SAMPLE CHAR	F6792000	

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70 11/21/72
00095E	47F0 092E	0092E		3261	AND ENTER FLOW	F6798000
00096E	9240 A006	00006		3262	BLANK PROPAGATION REQUIRED	F6796000
00096E	D200 0860 091F	00960 0091F		3263	SET BLANK SAMPLE	F6798000
00096E	D200 A007 A006	00007 00006		3264	SET COUNT	F6800000
00097E	4890 091E	0091E		3265	TANKDATA*(*) ,TANKDATA PROPAGATE BLANKS	F6802000
00097E	4890 091E	0091E		3266	GET MOVE COUNT	F6804000
00097A	47F0 092E	0092E		3267	LESS HVC	F6806000
00097E	47F0 092E	0092E		3268	ENTER FLOW	F6808000
00097E	47F0 092E	0092E		3269	END OF LOGICAL RECORD	F6810000
00097E	4890 0A28	00A28		3270	TANK ADDR	F6812000
00098E	4890 0A28	00A28		3271	FROM END PIR	F6814000
00098E	4890 0A28	00A28		3272	SET COUNT IN TANK	F6816000
00098E	4890 0A28	00A28		3273	SET COUNT IN TANK	F6818000
00098E	4890 0A28	00A28		3274	SET COUNT IN TANK	F6820000
00098E	4890 0A28	00A28		3275	SET COUNT IN TANK	F6822000
00098E	4890 0A28	00A28		3276	SET COUNT IN TANK	F6824000
00098E	4890 0A28	00A28		3277	SET COUNT IN TANK	F6826000
00098E	4890 0A28	00A28		3278	SET COUNT IN TANK	F6828000
00098E	4890 0A28	00A28		3279	SET COUNT IN TANK	F6830000
00098E	4890 0A28	00A28		3280	SET COUNT IN TANK	F6832000
00098E	4890 0A28	00A28		3281	SET COUNT IN TANK	F6834000
00098E	4890 0A28	00A28		3282	SET COUNT IN TANK	F6836000
00098E	4890 0A28	00A28		3283	SET COUNT IN TANK	F6838000
00098E	4890 0A28	00A28		3284	SET COUNT IN TANK	F6840000
00098E	4890 0A28	00A28		3285	SET COUNT IN TANK	F6842000
00098E	4890 0A28	00A28		3286	SET COUNT IN TANK	F6844000
00098E	4890 0A28	00A28		3287	SET COUNT IN TANK	F6846000
00098E	4890 0A28	00A28		3288	SET COUNT IN TANK	F6848000
00098E	4890 0A28	00A28		3289	SET COUNT IN TANK	F6850000
00098E	4890 0A28	00A28		3290	SET COUNT IN TANK	F6852000
00098E	4890 0A28	00A28		3291	SET COUNT IN TANK	F6854000
00098E	4890 0A28	00A28		3292	SET COUNT IN TANK	F6856000
00098E	4890 0A28	00A28		3293	SET COUNT IN TANK	F6858000
00098E	4890 0A28	00A28		3294	SET COUNT IN TANK	F6860000
00098E	4890 0A28	00A28		3295	SET COUNT IN TANK	F6862000
00098E	4890 0A28	00A28		3296	SET COUNT IN TANK	F6864000
00098E	4890 0A28	00A28		3297	SET COUNT IN TANK	F6866000
00098E	4890 0A28	00A28		3298	SET COUNT IN TANK	F6868000
00098E	4890 0A28	00A28		3299	SET COUNT IN TANK	F6870000
00098E	4890 0A28	00A28		3300	SET COUNT IN TANK	F6872000
00098E	4890 0A28	00A28		3301	SET COUNT IN TANK	F6874000
00098E	4890 0A28	00A28		3302	SET COUNT IN TANK	F6876000
00098E	4890 0A28	00A28		3303	SET COUNT IN TANK	F6878000
00098E	4890 0A28	00A28		3304	SET COUNT IN TANK	F6880000
00098E	4890 0A28	00A28		3305	SET COUNT IN TANK	F6882000
00098E	4890 0A28	00A28		3306	SET COUNT IN TANK	F6884000
00098E	4890 0A28	00A28		3307	SET COUNT IN TANK	F6886000
00098E	4890 0A28	00A28		3308	SET COUNT IN TANK	F6888000
00098E	4890 0A28	00A28		3309	SET COUNT IN TANK	F6890000
00098E	4890 0A28	00A28		3310	SET COUNT IN TANK	F6892000
00098E	4890 0A28	00A28		3311	SET COUNT IN TANK	F6894000
00098E	4890 0A28	00A28		3312	SET COUNT IN TANK	F6896000
00098E	4890 0A28	00A28		3313	SET COUNT IN TANK	F6898000
00098E	4890 0A28	00A28		3314	SET COUNT IN TANK	F6900000
00098E	4890 0A28	00A28		3315	SET COUNT IN TANK	F6902000

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
3316				\$BCR R0,0	REDUCE COUNT		
3317				AR R0,R0-1			P6862000
0009P2	4A80 130E	0130E		STH R0,TCBUPH	AND RESET		P6864000
0009P6	4080 D00E	0000E		CLC TCBUPCT,TCBUPH	IS ANOTHER BUFFER REQUIRED		P6866000
0009FA	D500 D00F	D00E	0000P	BNL GERABLE	ENABLE INTERRUPTS	V0J.1	P6868000
000A00	4780 0A1C	00A1C		SOC SPCOUT,TCFPCS	SHOW NEXT BUFFER PERMITTED		P6870000
3321				NOTE THAT THIS IS A VERY RESTRICTIVE			
3322				SIMULATION OF THE 'OC' INSTRUCTION FOR THE MODEL '20			
3323				HVC *7(1),TCFPCS			
3324				OI SPCOUT,*-*			
3325				HVC *7(1),TCFPCS+1			
000A04	D200 0A0B	D002	00A0B	00002			
000A0A	9600 0252	00252					
000A0E	D200 0A15	D003	00A15	00003			
000A14	9600 0253	00253					
000A18	92F0 0B5B	00B5B					
3328				MVI SPCSHOT+1,X'F0'	SHOW PCS CHANGE		P6872000
3329	GENABLE			\$SSH PF	ALLOW INTERRUPTS	V0J.1	P6873000
3330	GENABLE			DS OH			
3331				ALQ (*+4) SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSW			
3332				ORG *-4 SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSW			
3333				DC X'8100' SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSW			
3334				ORG *-2 SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSW			
3335				DC AL2(X*0100')			
3336				DC Y(*+2)			
3337				B GSERVICE	AND CONTINUE		P6874000
3338	GTANK			\$ACON 0	TANK ADDR		P6970000
3339	GTANK			DC Y(0)			
3340	GD200			EQU OD200	SHARE CONSTANT		P6974000
3341				DROP R9	DISCONTINUE TANK REG		P6976000



HR2 C O M S U P -- STPOPEN (OBTAINS PERMISSION TO BEGIN SENDING)

PAGE 88

LCC	OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	P150CT70	11/21/72
000A2A				3343 STPOPEN NULL *			
				3344+STPOPEN DS OH			P6980000
				3345 STRACE SSH=YES			
				3346 S5TO R14,TSAVA			P6982000
				3347+ STH R14,TSAVA			P6984000
				3348 S5TO R8,TSAVB			
				3349+ STH R8,TSAVB			P6986000
				3350 HVC TTANK+TANKSCB=TANKDSEC (1),TANKRCB=TANKDSEC (R8) SET YCN			P6988000
				3351 SLOAD R8,TANKCON			P6990000
				3352+ LH R8,TANKCON			
				3353 HAS R14,STPPUT			P6992000
				3354+ DC X'4D'			
				3355+ DC AL1(R14*16)			
				3356+ DC S(STPPUT)			
				3357 SLOAD R8,TSAVB			P6994000
				3358+ LH R8,TSAVB			
				3359 SLOAD R14,TSAVA			P6996000
				3360+ LH R14,TSAVA			
				3361 BE R14			P6998000
				3362 *			P7000000
				3363 TTANK SACON 0			P7002000
				3364+TTANK DC Y(0)			
				3365 DC X'90'			P7004000
				3366 DC X'00'			P7006000
				3367 DC H'0'			P7008000
				3368 TSAVA SACON 0			P7010000
				3369+TSAVA DC Y(0)			
				3370 TSAVB SACON 0			P7012000
				3371+TSAVB DC Y(0)			
				3372 TANKCON SACON TTANK			P7014000
				3373+TANKCON DC Y(TTANK)			

1112 G.B.

LCC	OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	DATE	TIME
3375	*				3375 * SEXTP - R14 = RETURN, R13 = BUFFER ADDR	P150CT70	11/21/72
3376	*				3376 * SEXTP - R14 = RETURN, R13 = BUFFER ADDR		
3377	*				3377 * SEXTP - R14 = RETURN, R13 = BUFFER ADDR		
3379	SEXTP				3379 SEXTP		
3380	SEXTP				3380 SEXTP		
3381	SEXTP				3381 SEXTP		
3382	SEXTP				3382 SEXTP		
3383	SEXTP				3383 SEXTP		
3384	SEXTP				3384 SEXTP		
3385	SEXTP				3385 SEXTP		
3386	SEXTP				3386 SEXTP		
3387	SEXTP				3387 SEXTP		
3388	SEXTP				3388 SEXTP		
3389	SEXTP				3389 SEXTP		
3390	SEXTP				3390 SEXTP		
3391	SEXTP				3391 SEXTP		
3392	SEXTP				3392 SEXTP		
3393	SEXTP				3393 SEXTP		
3394	SEXTP				3394 SEXTP		
3395	SEXTP				3395 SEXTP		
3396	SEXTP				3396 SEXTP		
3397	SEXTP				3397 SEXTP		
3398	SEXTP				3398 SEXTP		
3399	SEXTP				3399 SEXTP		
3400	SEXTP				3400 SEXTP		
3401	SEXTP				3401 SEXTP		
3402	SEXTP				3402 SEXTP		
3403	SEXTP				3403 SEXTP		
3404	SEXTP				3404 SEXTP		
3405	SEXTP				3405 SEXTP		
3406	SEXTP				3406 SEXTP		
3407	SEXTP				3407 SEXTP		
3408	SEXTP				3408 SEXTP		
3409	SEXTP				3409 SEXTP		
3410	SEXTP				3410 SEXTP		

LCC	OBJECT CODE	ADDR1	ADDR2	SYMT	SOURCE STATEMENT	F150CT70	11/21/72
				3413 *	CONTROL CHARACTERS	F7092000	
000001				3415 XSOH	EQU X'01'		
000002				3416 XSTX	EQU X'02'		
000003				3417 XETX	EQU X'03'		
000010				3418 XDLE	EQU X'10'		
000026				3419 XETB	EQU X'26'		
00002D				3420 XEQ	EQU X'2D'		
000032				3421 XSTN	EQU X'32'		
000037				3422 XEOT	EQU X'37'		
00003D				3423 XNAK	EQU X'3D'		
000061				3424 XACK1	EQU X'61'		
000070				3425 XACK0	EQU X'70'		
				3426	AIF ('EXPARNT' EQ 'YES').XPARA		
				3427 .XPARA	ANOP		
000010				3428 XLDR	EQU XDLE		
000010				3429 XTRL	EQU XDLE		
000060				3430 XCHN	EQU X'60'		
				3431 .XPARB	ANOP		
				3433	AIF (CHACHINE BE 20).D1	F7140000	
				3435 *	COMMUNICATIONS ADAPTER ADDRESSES	F7140000	
000056				3437 CAINTYD	EQU X'56'		
000055				3438 CAREAD	EQU X'5A'+1		
000059				3439 CAWRITE	EQU X'5B'+1		
000057				3440 CASENSE	EQU X'57'		
000050				3441 CAERROR	EQU X'50'		
000056				3442 CASCA	EQU X'56'		
000052				3443 CAENABLE	EQU X'52'		
000052				3444 CARECI	EQU X'51'+1		
000051				3445 CAWTRD	EQU X'50'+1		
				3446	AGO .D2		
				3447 .D2	ANOP		
				3449 *	BLOCK CONTROL BYTE INDICATORS	F7188000	
000010				3451 BCIGNRE	EQU X'10'		
000020				3452 BCRESRE	EQU X'20'		
					IGNORE BLOCK COUNT INDICATOR	F7192000	
					RESET BLOCK COUNT INDICATOR	F7194000	

HR2 C O M S U P -- INTERRUPT PROCESSOR (ENTRY POINT)

LOC	OBJECT CODE	ADDR1	ADDR2	SRST	SOURCE STATEMENT	F15OCT70	11/21/72
000A86				3454 \$JOINT NULL *	ALL INTERRUPTS ENTER HERE	F7198000	
000A86	9556 0091	00091		3455+\$JOINT DS OH		F7200000	
000A86	4770 0091			3456 AIF (MACHINE NE 20).X2		F7202000	
000A86	4770 0091			3457 CLI 145,CAINTID	IS THIS 8SCA	F7204000	
000A86	4770 0091			3458 BNE \$NOTIP	BR IF NO	F7206000	
000A86	4770 0091			3459 \$CONBUSY B	RETURN IF NO ACTIVITY	F7208000	
000A86	4770 0091			3460 CEXIT	BR IF ANY ERROR		
000A86	4770 0091			3461 TI0B	CERROR,CAERROR		
000A86	4770 0091			3462 DC X*9A*			
000A86	4770 0091			3463 DC AL1(CAERROR)			
000A86	4770 0091			3464 CENDREAD	S(CERROR)		
000A86	4770 0091			3465 CREADREQ B	CENDREAD		
000A86	4770 0091			3466 CREADREQ B	BR IF READ ENDING	F7210000	
000A86	4770 0091			3467 DS ***(CAREAD),&TBPSIZ OTHERWISE START READ		F7212000	
000A86	4770 0091			3468 HVC ***(CAREAD),400 XIOXIOXIOXIOXIO			
000A86	4770 0091			3469 ORG *-6 XIOXIOXIOXIOXIO			
000A86	4770 0091			3470 DC X'D0' XIOXIOXIOXIOXIO			
000A86	4770 0091			3471 ORG *-5 XIOXIOXIOXIOXIO			
000A86	4770 0091			3472 EQU *-2	READ COUNT FIELD	V03.1 F7213000	
000A86	4770 0091			3473 BC 7,*-6	WAIT FOR READ TO TAKE	F7214000	
000A86	4770 0091			3474 HVI CHEADREQ+1,X*F0'	SHOW READ ACTIVE	F7216000	
000A86	4770 0091			3475 SPSW 144	AND EXIT	F7218000	
000A86	4770 0091			3476 DC AL4 (144) SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3477 ORG *-4 SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3478 DC X'8100' SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3479 ORG *-2 SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3480 NULL		F7220000	
000A86	4770 0091			3481 DS OH			
000A86	4770 0091			3482 AIF (TRACE EQ 0 OR MACHINE NE 20).ITRA		F7222000	
000A86	4770 0091			3483 ANOP	RESTORE INTERRUPTED REGS	F7228000	
000A86	4770 0091			3484 \$RESTORE R13,R15,CREGS			
000A86	4770 0091			3485 LH R13,CREGS+0			
000A86	4770 0091			3486 LH R14,CREGS+2			
000A86	4770 0091			3487 LH R15,CREGS+4			
000A86	4770 0091			3488 ANOP		F7232000	
000A86	4770 0091			3489 NULL		F7234000	
000A86	4770 0091			3490 DS OH			
000A86	4770 0091			3491 SPSW 144	RETURN TO INTERRUPTED LOCATION	F7236000	
000A86	4770 0091			3492 DC AL4 (144) SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3493 ORG *-4 SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3494 DC X'8100' SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3495 ORG *-2 SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSWS			
000A86	4770 0091			3496 AGO .X3		F7238000	
000A86	4770 0091			3497 ANOP		F7262000	

LLCC	OBJECT CODE	ADDR1	ADDR2	STHT	SOURCE STATEMENT

000AC	3499 \$ENDREAD NULL *						EXTERNAL ENTRY POINT	F7268000
000ABC	3500+\$ENDREAD DS	OH					EXAMINE CONTROL INFORMATION	F7270000
	3501 CENDREAD NULL *	OH						
	3502+CENDREAD DS	OH						
	3503 AIP	6MACHINE WE 20).X21						F7272000
	3504 AIP	(TRACE EQ 0 OR 6MACHINE WE 20).ITRC						F7274000
	3505 .ITRC							F7282000
	3506 \$SAVE	R13,R15,CREGS					SAVE INTERRUPTED REGS	F7284000
00ED8	3507+	STH						
00EDA	3508+	STH R14,CREGS+2						
00EDC	3509+	STH R15,CREGS+4						
	3510 .ITRD	ANOP						F7286000
	3511 SLOAD	R13,CBUFFER					GET ACTIVE BUFFER	F7288000
00EC6	3512+	LH						
	3513 .X21	ANOP				*		F7290000
	3514	USING BUFDSCT,R13						F7292000
000C00								
000ACC 47F0 0A1C	3516	B	CNOLOGAL				AVOID LOG OVERHEAD	F7296000
	3518 *						HOP THE ABOVE BRANCH TO LOG EVERY BLOCK RECEIVED	F7300000
000AD0 D202 00C4 D006 000C4 00005	3520	HVC	SLOGINTO(3),BUFSTART+1				RESPONSE LEADERS	F7304000
000AD6 4D	3521	\$LOG	XTPREAD				LOG RECEIVED DATA	F7306000
000AD7 F0	3522+	DC	X'4D'					
000AD8 061A	3523+	DC	AL1(R15*16)					
000ADA 0090	3524+	DC	S(\$LOG)					
	3525+	DC	AL2(XTPREAD*(LOGEND-LOGDSCT))					
	3526 CNOLOGAL NULL *						ENTRY TO SKIP LOGGING EVERYTHING	F7308000
000ADC	3527+CNOLOGAL DS	OH						
000ADC D200 0ED4 D005 00ED4 00005	3528	HVC	CRESP,BUFSTART				GET FIRST RESPONSE BYTE	F7310000
000AE2 9510 0ED4	3529	CLI	CRESP,XDLE				IS IT DLE LEADER...	F7312000
000AE6 4770 0AF0	3530	BNE	*+10				BR IF NO	F7314000
000AEA D200 0ED4 D006 00ED4 00006	3531	HVC	CRESP,BUFSTART+1				YES... GET REAL RESPONSE	F7316000
000AF0 9501 0ED4	3532	CLI	CRESP,X50H				IS THIS NON-PARENT LEADER...	F7318000
000AF4 4780 0B9A	3533	BE	CINBUF				BR IF YES TO PROCESS TEXT	F7320000
000AF8 9502 0ED4	3534	CLI	CRESP,XSTX				IS THIS DATA	F7322000
000AFC 4780 0B9A	3535	BE	CINBUF				BR IF YES TO PROCESS	F7324000
000E00 9570 0ED4	3536	CLI	CRESP,XACKO				IS THIS WRITE ACKNOWLEDGEMENT	F7326000
000B04 4780 0B14	3537	BE	CAKED				BR IF YES	F7328000
000B14 4780 0B14	3538	CLI	CRESP,XNAK				WERE WE NAK'ED	F7330000
000E08 953D 0ED4	3539	BE	CHAKED				BR IF YES	F7332000
000E0C 4780 0D54	00D54	B	CHAKED				UNKNOWN RESPONSE RECEIVED	F7334000
000E10 47F0 0DFC	00D6C	B	CHAKED					F7336000

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	F150CT70	11/21/72
3542 *							
3543 *					POSITIVE ACKNOWLEDGEMENT OF LAST WHITE RECEIVED		
3544 *							
3546	CACKED			NULL	ACKNOWLEDGEMENT HAS ACK		
3547	CACKED			DS			
3548				NI	TURN OFF WAIT-A-BIT		
3549	CURTOK			NULL			
3550	CURTOK			DS			
3551				TH	IS THIS A DUMMY BUFFER		
3552				BO	BR IF YES		
3553				HVI	RESET STATUS BYTE		
3554				SPREE	RELEASE WRITTEN BUFFER		
3555				MVC			
3556				STH	ENTRY TO START NEXT WRITE		
3557	CURTOK			NULL			
3558	CURTOK			DS			
3559				LH	LOAD DELAYING CONSTANT		
3560				MVC	SET READ COUNT TO FULL		
3561	CURTOK			NULL	SET READ COUNT TO FULL		
3562	CURTOK			DS	COMBINATOR CYCLE POINT		
3563				TH	IS WAIT-A-BIT SET		
3564				BO	BR IF YES		
3565				HVI	RESET BUFFERING STOP		
3566				SDCHN	OTHERWISE CHECK WRITE QUEUE		
3567				CLI			
3568				BE			
3569				LH			
3570				MVC			
3571				BNZ			
3572				NOP			
3573				BAS			
3574				DC			
3575				DC			
3576				DC			
3577				AH			
3578				BP			
3579				B			
3580				CSNDRT			
3581				DS			
3582				MVC			
3583				GI			
3584				MVC			
3585				LH			
3586				STH			
3587				NI			
3588				B			
3589							

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
				3592 *	WAIT-A-BIT SEQUENCE RECEIVED FROM HASP	P7A20000	
				3593 *		P7A22000	
				3594 CHAITBIT NULL *		P7A24000	
000B92	92P0 07P7	007P7		3595*CHAITBIT DS OH			
000B92	92P0 07P7	007P7		3596 NYI STOPPHONE+1,X1P0V	STOP ALL BUFFERING	P7A26000	
				3597 STRACE SSH=NO		P7A28000	
000B96	47P0 0B5A	00B5A		3598 B \$PCSHOT	GO IDLE	P7A30000	





LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	11/21/72
000C1A	4780 0C26			3653+	BE *+12	
000C1E	4850 F000			3654+	LH R15,0(0,R15)	
000C22	47F0 0C16			3655+	B *-12	
000C26	40D0 F000			3656+	STH R13,0(0,R15)	
000C2A	D201 D000	1314	00000	3657+	MVC 0(2,R13),=H'0'	
000C30	48F0 1338			3658	SLA R15,BUFDATA-BUFDSECT GET RCB OFFSET	V03.1 F7492100
000C34	40F0 D002			3659+	LH R15,Y(BUFDATA-BUFDSECT)	
000C38	48F0 E00E			3660	STH R15,BUFCOUNT SAVE OFFSET TO FIRST RCB	V03.1 F7492200
000C3C	4AF0 1345			3661	LH R15,TCRBUFLH PICK LIMIT AND COUNT	V03.1 F7492300
000C40	40F0 200E			3662	SAA R15,1 ADD 1 TO COUNT	V03.1 F7492400
000C44	9640 E005			3663+	AH R15,Y(1)	
000C48	D500 E00F			3664	STH R15,TCRBUFLH SAVE	V03.1 F7492500
000C4E	4740 0C76			3665	OI TCRSTAT,TCRBUFLH SHOW ACTION REQUIRED ON TCT	V03.1 F7492600
000C52	D200 0C59	E002	00C59	3666	ALP (8HOME EQ 0),HOMASGH	V03.1 F7492620
000C58	9600 0252			3667	CLC TCRBUFLH IS BUFFER MAXIMUM EXCEEDED	V03.1 F7492700
000C5C	D200 0C63	E003	00C63	3668	BL CASHORE IF NOT ALLOW MORE	V03.1 F7492800
000C62	9600 0253			3669	\$BITOFF \$FCSOUT,TCRBUFLH IF NOT ALLOW MORE	V03.1 F7492900
000C66	48F0 0252			3670	NOTE THAT THIS IS A VERY RESTRICTIVE	
000C6A	48F0 F002			3671+	SIMULATION OF THE 'OC' INSTRUCTION FOR THE MODEL 20	
000C6E	40F0 0252			3672+	MVC *+7(1),TCRBUFLH	
000C72	47F0 0B2E			3673+	OI \$FCSOUT, *-*	
000C76	92F0 0B5B			3674+	MVC *+7(1),TCRBUFLH	
000C7A	47F0 0B2E			3675+	OI \$FCSOUT, *-*	
000C7E	9110 0BBB			3676+	OI \$FCSOUT+1, *-*	
000C82	4710 0BD2			3677+	LH R15,\$FCSOUT	
000C86	9120 0BBB			3678+	SH R15,\$FCSOUT	
000C8A	4700 0C9A			3679+	STH R15,\$FCSOUT	
000C8E	D100 0ED1	0BBB	00ED1	3680	DROP R14	
000C94	47F0 0BD2			3681	B CRTNEXT CONTINUE TRANSMISSION	V03.1 F7493000
000C98	D100 0C4	0BBB	00BBB	3682	MVI \$FCSHOT+1,X'F0'	V03.1 F7493100
000C9E	D100 0C5	0ED1	00C5	3683	B CRTNEXT SHOW FCS ACTIVE	V03.1 F7493200
000CA4	4D			3684	RECEIVED RCB CHECK COUNT NOT CORRECT	
000CA5	FD			3685	DETERMINE DAMAGE	
000CA6	061A			3686	OH OH	
000CAB	D200 02CB	0BBB	00ECB	3687	TCRBUFLH IS THE IGNORE BIT ON	
000CBA	D200 02CB	0BBB	00ECB	3688	BR IF YES	
000CB4	48F0 0ED0			3689	IS THIS A RESET REQUEST	
000CB8	4720 0CC0			3690	BR IF NO	
000CBE	D100 0ED1	0BBB	00ED1	3691	YES... DO IT	
000CC4	48F0 0ED0			3692	AND PROCESS RECORD	
000CC8	4720 0CC0			3693	BLOCK COUNTS DO NOT AGREE	
000CCB	D200 02CB	0BBB	00ECB	3694	OH	
000CCD	D200 02CB	0BBB	00ECB	3695	LOGINFO(1),CBCB SET FOR ERROR LOG	
000CCF	D200 02CB	0BBB	00ECB	3696	LOGINFO(1),CBCBNTI SET FOR LOG	
000CD4	48F0 0ED0			3697	LOG XRCBCHER	
000CD8	4720 0CC0			3698	Y'AD.	
000CDB	D200 02CB	0BBB	00ECB	3699	AL1(R15+16)	
000CDE	D200 02CB	0BBB	00ECB	3700+	DC S(\$LOG)	
000CE4	48F0 0ED0			3701+	DC	
000CE8	4720 0CC0			3702+	DC	
000CEB	D200 02CB	0BBB	00ECB	3703+	DC	
000CEC	D200 02CB	0BBB	00ECB	3704	AL2(XRCBCHER*(LOGEND-LOGDSECT))	
000CED	D200 02CB	0BBB	00ECB	3705	CMEMP+1(1),CBCB ISOLATE RECEIVED CNT	
000CEE	D200 02CB	0BBB	00ECB	3706	R15,CBCBNTI-1 GET EXPECTED CNT	
000CE8	4720 0CC0			3707	SH R15,CTEMP LESS RECEIVED	
000CEB	D200 02CB	0BBB	00ECB	3707	BR IF TOO LOW	

LOC		OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70 11/21/72	
1	000C8C	4170 1349	01348	3708	AH	R15, H'16'	MAKE DIFFERENCE POSITIVE	F7532000
2	000CC0	49F0 DECC	00ECC	3709	CH	R15, CHAYDUP:	IS DIFFERENCE REASONABLE	F7534000
3	000CC4	4720 0CCC	00CCC	3710	BH	CBLKLOST	BE IF NO	F7536000
4	000CC8	47F0 0818	00818	3711	B	CHFTOK	IGNORE BLOCK	F7538000
5	000CCC							
6	000CCD							
7	000CDE							
8	000CE0							
9	000CE4							
10	000CE8							
11	000CEC							
12	000CEB							
13	000CEA							
14	000CE9							
15	000CE8							
16	000CE7							
17	000CE6							
18	000CE5							
19	000CE4							
20	000CE3							
21	000CE2							
22	000CE1							
23	000CE0							
24	000CF0							
25	000CF1							
26	000CF2							
27	000CF3							
28	000CF4							
29	000CEB							
30	000CEA							
31	000CE9							
32	000CE8							
33	000CE7							
34	000CE6							
35	000CE5							
36	000CE4							
37	000CE3							
38	000CE2							
39	000CE1							
40	000CE0							
41	000CF0							
42	000CF1							
43	000CF2							
44	000CF3							
45	000CF4							
46	000CEB							
47	000CEA							
48	000CE9							
49	000CE8							
50	000CE7							
51	000CE6							
52	000CE5							
53	000CE4							
54	000CE3							
55	000CE2							
56	000CE1							
57	000CE0							
58	000CF0							
59	000CF1							
60	000CF2							
61	000CF3							
62	000CF4							
63	000CEB							
64	000CEA							
65	000CE9							
66	000CE8							
67	000CE7							
68	000CE6							
69	000CE5							
70	000CE4							
71	000CE3							
72	000CE2							
73	000CE1							
74	000CE0							
75	000CF0							
76	000CF1							
77	000CF2							
78	000CF3							
79	000CF4							
80	000CEB							
81	000CEA							
82	000CE9							
83	000CE8							
84	000CE7							
85	000CE6							
86	000CE5							
87	000CE4							
88	000CE3							
89	000CE2							
90	000CE1							
91	000CE0							
92	000CF0							
93	000CF1							
94	000CF2							
95	000CF3							
96	000CF4							
97	000CEB							
98	000CEA							
99	000CE9							
100	000CE8							
101	000CE7							
102	000CE6							
103	000CE5							
104	000CE4							
105	000CE3							
106	000CE2							
107	000CE1							
108	000CE0							
109	000CF0							
110	000CF1							
111	000CF2							
112	000CF3							
113	000CF4							
114	000CEB							
115	000CEA							
116	000CE9							
117	000CE8							
118	000CE7							
119	000CE6							
120	000CE5							
121	000CE4							
122	000CE3							
123	000CE2							
124	000CE1							
125	000CE0							
126	000CF0							
127	000CF1							
128	000CF2							
129	000CF3							
130	000CF4							
131	000CEB							
132	000CEA							
133	000CE9							
134	000CE8							
135	000CE7							
136	000CE6							
137	000CE5							
138	000CE4							
139	000CE3							
140	000CE2							
141	000CE1							
142	000CE0							
143	000CF0							
144	000CF1							
145	000CF2							
146	000CF3							
147	000CF4							
148	000CEB							
149	000CEA							
150	000CE9							
151	000CE8							
152	000CE7							
153	000CE6							
154	000CE5							
155	000CE4							
156	000CE3							
157	000CE2							
158	000CE1							
159	000CE0							
160	000CF0							
161	000CF1							
162	000CF2							
163	000CF3							
164	000CF4							
165	000CEB							
166	000CEA							
167	000CE9							
168	000CE8							
169	000CE7							
170	000CE6							
171	000CE5							
172	000CE4							
173	000CE3							
174	000CE2							
175	000CE1							
176	000CE0							
177	000CF0							
178	000CF1							
179	000CF2							
180	000CF3							
181	000CF4							
182	000CEB							
183	000CEA							
184	000CE9							
185	000CE8							
186	000CE7							
187	000CE6							
188	000CE5							
189	000CE4							
190	000CE3							
191	000CE2							
192	000CE1							
193	000CE0							
194	000CF0							
195	000CF1							
196	000CF2							
197	000CF3							
198	000CF4							
199	000CEB							
200	000CEA							
201	000CE9							
202	000CE8							
203	000CE7							
204	000CE6							
205	000CE5							
206	000CE4							
207	000CE3							
208	000CE2							
209	000CE1							
210	000CE0							
211	000CF0							
212	000CF1							
213	000CF2							
214	000CF3							
215	000CF4							
216	000CEB							
217	000CEA							
218	000CE9							
219	000CE8							
220	000CE7							
221	000CE6							
222	000CE5							
223	000CE4							
224	000CE3							
225	000CE2							
226	000CE1							
227	000CE0							
228	000CF0							
229	000CF1							
230	000CF2							
231	000CF3							
232	000CF4							
233	000CEB							



LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	DATE
3779 *					PREPARE TO RETRANSMIT	11/21/72
3780 *					LOG NEGATIVE REPLY	F7640000
3781 *					LOG NEGATIVE REPLY	F7646000
3782 *					LOG NEGATIVE REPLY	F7648000
3783 CHAKED	NULL				PREPARE TO RETRANSMIT	F7652000
3784 CHAKED	DS				LOG NEGATIVE REPLY	F7654000
3785	SLOG				LOG NEGATIVE REPLY	F7654000
3786+	DC				LOG NEGATIVE REPLY	F7654000
3787+	DC				LOG NEGATIVE REPLY	F7654000
3788+	DC				LOG NEGATIVE REPLY	F7654000
3789+	DC				LOG NEGATIVE REPLY	F7654000
3790	DC				LOG NEGATIVE REPLY	F7654000
3791	DC				LOG NEGATIVE REPLY	F7654000
3792	DC				LOG NEGATIVE REPLY	F7654000
3793	DC				LOG NEGATIVE REPLY	F7654000
3794	DC				LOG NEGATIVE REPLY	F7654000
3795	DC				LOG NEGATIVE REPLY	F7654000
3796	DC				LOG NEGATIVE REPLY	F7654000
3797	DC				LOG NEGATIVE REPLY	F7654000
3798	DC				LOG NEGATIVE REPLY	F7654000
3799	DC				LOG NEGATIVE REPLY	F7654000
3800	DC				LOG NEGATIVE REPLY	F7654000
3801	DC				LOG NEGATIVE REPLY	F7654000
3802	DC				LOG NEGATIVE REPLY	F7654000
3803	DC				LOG NEGATIVE REPLY	F7654000
3804	DC				LOG NEGATIVE REPLY	F7654000
3805	DC				LOG NEGATIVE REPLY	F7654000
3806	DC				LOG NEGATIVE REPLY	F7654000
3807	DC				LOG NEGATIVE REPLY	F7654000
3808	DC				LOG NEGATIVE REPLY	F7654000
3809	DC				LOG NEGATIVE REPLY	F7654000
3810	DC				LOG NEGATIVE REPLY	F7654000
3811	DC				LOG NEGATIVE REPLY	F7654000
3812	DC				LOG NEGATIVE REPLY	F7654000
3813	DC				LOG NEGATIVE REPLY	F7654000
3814	DC				LOG NEGATIVE REPLY	F7654000
3815	DC				LOG NEGATIVE REPLY	F7654000
3816	DC				LOG NEGATIVE REPLY	F7654000
3817	DC				LOG NEGATIVE REPLY	F7654000
3818	DC				LOG NEGATIVE REPLY	F7654000
3819	DC				LOG NEGATIVE REPLY	F7654000
3820	DC				LOG NEGATIVE REPLY	F7654000
3821	DC				LOG NEGATIVE REPLY	F7654000
3822	DC				LOG NEGATIVE REPLY	F7654000
3823	DC				LOG NEGATIVE REPLY	F7654000
3824	DC				LOG NEGATIVE REPLY	F7654000
3825	DC				LOG NEGATIVE REPLY	F7654000

HR2 C O M S U P -- CNAKED (PROCESS ERROR REPLY FROM HASP)

LCC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT  
 0001A6 47P0 0DS4 00DP4 3826 B CNWRITE AND GO WRITE IT P7710000

P150CT70 11/21/72



LCC	OBJECT CODE	ADDR1	ADDR2	STRT	SOURCE STATEMENT	P150CT'0	11/21/72
000DF4	3865 CWRITE NULL				OH	F7768000	
	3866+CWRITE				DS		
000DF4	3867 AIF				OH	F7770000	
	3868 01352				DS		
000DF4	3869 00A9C				DS	F7772000	
	3870 00E84				DS	F7774000	
000DF4	3871 00004				DS	F7776000	
	3872 00E14				DS	F7778000	
000DF4	3873 00E14				DS	F7780000	
	3874 00E86				DS	F7782000	
000DF4	3875 00E5A				DS	F7784000	
	3876 CSETEND				DS	F7786000	
000DF4	3877+CSETEND				DS	F7788000	
	3878 00002				DS		
000DF4	3879 01356				DS	F7790000	
	3880 00E86				DS	F7792000	
000DF4	3881 01352				DS	F7794000	
	3882 01356				DS	F7796000	
000DF4	3883 01356				DS	F7798000	
	3884 00000				DS	F7800000	
000DF4	3885 CWRITE NULL				DS	F7802000	
	3886+CWRITE				DS	F7804000	
000DF4	3887 00004				DS		
	3888 00E5A				DS	F7806000	
000DF4	3889 00E5A				DS	F7808000	
	3890 00E5A				DS	F7810000	
000DF4	3891 00007				DS	F7812000	
	3892 00007				DS	F7814000	
000DF4	3893 00004				DS	F7816000	
	3894 00E5A				DS	F7818000	
000DF4	3895 00008				DS	F7820000	
	3896 CWRITE NULL				DS	F7822000	
000DF4	3897+CWRITE				DS		
	3898 00A97				DS	F7824000	
000DF4	3899 00E5A				DS	F7826000	
	3900 00E72				DS	F7828000	
000DF4	3901 00006				DS	F7830000	
	3902 00006				DS	F7832000	
000DF4	3903 00006				DS		
	3904 00006				DS		
000DF4	3905 00006				DS		
	3906 00006				DS		
000DF4	3907 CWRITE				DS		
	3908+CWRITE				DS		
000DF4	3909 AIF				DS	F7834000	
	3910 .TRX				DS		
000DF4	3911 00E5A				DS	F7836000	
	3912 00E5A				DS	F7838000	
000DF4	3913 00E5A				DS	F7840000	
	3914 00E5A				DS		
000DF4	3915 .TRZ				DS		
	3916 00A8F				DS		
000DF4	3917 00A8F				DS		

(3867-3877)  
 (3878-3887)  
 (3888-3897)  
 (3898-3907)  
 (3908-3917)

LCC OBJECT CODE		ADDR1	ADDR2	STMT	SOURCE STATEMENT		P150CT70 11/21/72	
				3917	AIP (CHACHINE NE 20 OR SLINBSPD LT 19200).CL		V03.1	F7850000
				3918	ANOP			F7854000
				3919	COMWRITE XIO	3--*(CWRITE),0		F7856000
				3920	COMWRITE DS	OH		
000882				3921+	HVC	3--*(CWRITE),0 XIOXIOXIOXIOXIO		
000882	D258	0000	00000	3922+	ORG	3--6 XIOXIOXIOXIOXIOXIO		
000882	D0			3923+	DC	X'D0' XIOXIOXIOXIOXIOXIO		
000888				3924+	ORG	3--5 XIOXIOXIOXIOXIOXIO		
000888	4770	0E82		3925	BC	7,3--6		
				3926	SPSW	104		F7858000
00088C	00000090			3927+	DC	AL4 (104) SPSWSPSWSPSWSPSWSPSWSPSWSPSW		F7860000
00089C				3928+	ORG	3--4 SPSWSPSWSPSWSPSWSPSWSPSWSPSW		
00088C	8100			3929+	DC	X'8100' SPSWSPSWSPSWSPSWSPSWSPSWSPSW		
000890				3930+	ORG	3--2 SPSWSPSWSPSWSPSWSPSWSPSWSPSW		
				3931	AGO	.X5		F7862000
				3932	ANOP			F7942000



LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P156CT70	11/21/72
000E90				3938 *	3938 * CH		
				3939+ERROR	DS		
				3940	AIP (SMACHINE NE 20).X10		F7946000
				3941	AIP (STRACE EQ 0 OR SMACHINE NE 20).ITRE		F7948000
				3942 .ITRE	ANOP		F7950000
				3943	SSAVE R13,R15,CREGS		F7954000
				3944+	STH R13,CREGS+0		F7956000
				3945+	STH R14,CREGS+2		F7958000
				3946+	STH R15,CREGS+4		F7966000
				3947 .ITRP	ANOP		F7968000
				3948	SLOAD R13,CBUPPER		F7970000
				3949+	LH R13,CBUPPER		F7972000
				3950	CIO CENSE,CASENSE		
				3951+	DC X'9B'		F7974000
				3952+	DC AL1(CASENSE)		
				3953+	DC S(CENSE)		
				3954 CENSE	DCU *+1		
				3955	HVI SLOGINFO,*-*		F7976000
				3956	SLOG XUNITCHK		F7978000
				3957+	DC X'4D'		F7980000
				3958+	DC AL1(R15*16)		
				3959+	DC S(\$LOG)		
				3960+	DC AL2(XUNITCHK*(LOGEND-LOGDSECT))		
				3961	CLI CENSE,X'7F'		
				3962	BH CREWRITE		
				3963 *	PROCESS READ ERROR		
				3964 COLDRCB	BUFDATA,*-*		F7982000
				3965	BE CSENDAK		F7984000
				3966	NI BUFSTAT,255-BUFTXT		F7986000
				3967	B CSENDAK		F7987000
				3968	AGO .X12		F7988000
				3969 .X12	ANOP		F7990000
							F8148000

LOC	OBJECT CODE	ADDR1	ADDR2	SRHT	SOURCE STATEMENT	
000EC6 0000					3972 CBUFFER \$ACON 0	ACTIVE COMMUNICATIONS BUFFER P8154000
000EC6 0000					3973 CBUFFER DC Y(0)	
000EC8 0000					3974 \$BUFFER EQU CBUFFER	EXTERNAL REFERENCE NAME P8156000
000ECA 0000					3975 CFC\$OUT DC H'0'	LAST PCS TRANSMITTED TO HASP P8158000
000EEC 0003					3976 CTEMP DC H'0'	TEMPORARY STORAGE P8160000
000EEC 0000					3977 CHAXDUP DC H'3'	MAX REPEATED BLOCKS P8162000
000EEC 00					3978 DC AL1(0)	FIRST BYTE OF HALF-WORD P8164000
000EEF 80					3979 CBCBCHTO DC AL1(X'80')	BLOCK CHECK COUNT OUT P8166000
000ED0 00					3980 DC AL1(0)	SPACER P8168000
000ED1 80					3981 CBCBCNTI DC AL1(X'80')	* P8170000
000ED2 0000					3982 DC H'0'	COUNT OF QUEUED INPUT BUFFERS P8172000
000ED3					3983 \$INQCMT EQU *-1	RESPONSE CHARACTER RECEIVED P8174000
000ED4 00					3984 CRESP DC AL1(0)	RESPONSE CHARACTER RECEIVED P8176000
					3985 AIP (STRACE EQ 0 OR CHACHINE NE 20).TRG	P8178000
					3986 .TRG ANOP	P8184000
000ED5 000000					3987 CREGS \$WCON (0,0,0)	REGISTER SAVE AREA P8186000
000ED8 000000000000000000					3988 CREGS DC A(0,0,0)	
000EE4 0000					3989 .TRH ANOP	P8188000
					3990 CALASTPO DC H'0'	LAST ADDR STORAGE P8190000
CONTROL SEQUENCES						
000EE6 1002					3992 * AL1(XLDR,XSTM)	START-OF-TEXT SEQUENCE P8194000
000EE8 1026					3993 XSTXSEQ DC	P8196000
000EEA 1070					3994 XETBSEQ DC	END-OF-TEXT-BLOCK SEQUENCE P8198000
000EEC 323D					3995 XACKSEQ DC	POSITIVE ACKNOWLEDGEMENT SEQUENCE P8200000
					3996 XNAKSEQ DC	NEGATIVE ACKNOWLEDGEMENT SEQUENCE P8202000
					3997 AIP (CHACHINE EQ 20).S1	P8204000
					3998 .S1 ANOP	P8240000
					3999 DROP R13	KILL BUFFER ADDRESSABILITY P8242000
					4000 AIP (CHACHINE EQ 20).YOSRP1	P8244000
					4001 .YOSRP1 ANOP	P8488000

HB2 S N O T T P -- UNIT RECORD INTERRUPT HANDLER

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	P150CT70	11/21/72
				4003	AIF (ECONSOLE EQ 0).YOSKE2		
				4004	.YOSKE2 ANOP		P8492000
				4005	\$NOTTP NULL		P8508000
				4006	+\$NOTTP DS		P8510000
				4007	YORET SPSW 100		P8512000
				4008	YORET DS OH		
				4009	AL4(100) SPSWSPSWSPSWSPSWSPSWSPSWSPSW		
				4010	++A SPSWSPSWSPSWSPSWSPSWSPSWSPSWSPSW		
				4011	DC X'8100' SPSWSPSWSPSWSPSWSPSWSPSWSPSW		
				4012	ORG ++2 SPSWSPSWSPSWSPSWSPSWSPSWSPSW		
				4013	(ER(2)).YOSKE3		P8514000
				4014	.YOSKE3 ANOP		P8616000

RETURN TO INTERRUPTED LOCATION



LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
000EP2	0P74			4021	\$1STANK \$GENTANK	
000EP4	00			4022	*STANK1 DC Y(STANK2)	
000EP5	00			4023	DC AL1(O)	TANK RCB
000EP6	0000			4024	DC AL1(O)	TANK SRCB
000EP8	40404040404040			4025	DC AL2(O)	TANK COUNT
000EP7	40404040			4026	DC 120C	TANK DATA
000F74	OFF6			4027	DC (4)C	TANK WORK SPACE
000F76	00			4028	*STANK2 DC Y(STANK3)	
000F77	00			4029	DC AL1(O)	TANK RCB
000F78	0000			4030	DC AL1(O)	TANK SRCB
000F7A	40404040404040			4031	DC AL2(O)	TANK COUNT
000EP2	40404040			4032	DC 120C	TANK DATA
000FF6	1078			4033	DC (4)C	TANK WORK SPACE
000FF8	00			4034	*STANK3 DC Y(STANK4)	
000FF9	00			4035	DC AL1(O)	TANK RCB
000FFA	0000			4036	DC AL1(O)	TANK SRCB
000FFC	40404040404040			4037	DC AL2(O)	TANK COUNT
001C74	40404040			4038	DC 120C	TANK DATA
001C78	10FA			4039	DC (4)C	TANK WORK SPACE
001C7A	00			4040	*STANK4 DC Y(STANK5)	
001C7B	00			4041	DC AL1(O)	TANK RCB
001C7C	0000			4042	DC AL1(O)	TANK SRCB
00107E	40404040404040			4043	DC AL2(O)	TANK COUNT
0010P6	40404040			4044	DC 120C	TANK DATA
0010PA	117C			4045	DC (4)C	TANK WORK SPACE
0010FC	00			4046	*STANK5 DC Y(STANK6)	
0010FD	00			4047	DC AL1(O)	TANK RCB
0010PE	0000			4048	DC AL1(O)	TANK SRCB
001100	40404040404040			4049	DC AL2(O)	TANK COUNT
001178	40404040			4050	DC 120C	TANK DATA
00117C	117E			4051	DC (4)C	TANK WORK SPACE
00117E	00			4052	*STANK6 DC Y(STANK7)	
00117F	00			4053	DC AL1(O)	TANK RCB
001180	0000			4054	DC AL1(O)	TANK SRCB
001182	40404040404040			4055	DC AL2(O)	TANK COUNT
0011PA	40504040			4056	DC 120C	TANK DATA
0011E2	1280			4057	DC (4)C	TANK WORK SPACE
001200	00			4058	*STANK7 DC Y(STANK8)	
001201	00			4059	DC AL1(O)	TANK RCB
001202	0000			4060	DC AL1(O)	TANK SRCB
001204	40404040404040			4061	DC AL2(O)	TANK COUNT
00127C	40404040			4062	DC 120C	TANK DATA
001280	0000			4063	DC (4)C	TANK WORK SPACE
001282	00			4064	*STANK8 DC Y(STANK9)	
001283	00			4065	DC AL1(O)	TANK RCB
001284	0000			4066	DC AL1(O)	TANK SRCB
001286	40404040404040			4067	DC AL2(O)	TANK COUNT
0012FE	40404040			4068	DC 120C	TANK DATA
000000				4069	DC (4)C	TANK WORK SPACE
000EP2				4070	*STANK9 EQU 0	
4071	*STANK EQU			4071	*STANK1	EXTERNAL NAME
4072	RIP			4072	RIP	END CHAIN
4073	*TANKSRP ANOP			4073	*TANKSRP ANOP	EXTERNAL EQ 0 AND SPRCONS EQ 0).TANKSRP

LCC		OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
1	2						
3	4	001308			4075	LTORG	
5	6	001308 00000000			4076	=P'0'	
7	8	00130C 00CA			4077	=Y(SCITCT)	
9	10	00130E FFF			4078	=H'1'	
11	12	001310 0312			4079	=Y(HCONTTAB-2)	
13	14	001312 00CA			4080	=Y(STCT1)	
15	16	001314 0000			4081	=H'0'	
17	18	001316 0006			4082	=Y(TANKDATA-TANKDSEC)	
19	20	001318 00F2			4083	=Y(RCTTANK1)	
21	22	00131A 0050			4084	=H'80'	
23	24	00131C 0004			4085	=H'4'	
25	26	00131E 01A5			4086	=Y(SERRTAB)	
27	28	001320 0001			4087	=H'1'	
29	30	001322 0002			4088	=Y(TANKRCB-TANKDSEC)	
31	32	001324 06BA			4089	=Y(OG01)	
33	34	001326 06C8			4090	=Y(OSQUEZE)	
35	36	001328 0708			4091	=Y(OCNPF1)	
37	38	00132A 0716			4092	=Y(OCNPF1)	
39	40	00132C 0004			4093	=Y(OCNPF1)	
41	42	00132E 001F			4094	=H'31'	
43	44	001330 0040			4095	=H'64'	
45	46	001332 003F			4096	=H'63'	
47	48	001334 0000			4097	=Y(LTANKCHN-2)	
49	50	001336 0003			4098	=H'3'	
51	52	001338 000A			4099	=Y(BUFDATA-BUFDSECT)	
53	54	00133A 0189			4100	=Y(400-BUFDATA-BUFDSECT-2)	
55	56	00133C 0004			4101	=Y(BUFDATA-BUFDSECT-1)	
57	58	00133E 0008			4102	=Y(TCTANK-TCTDSECT)	
59	60	001340 024E			4103	=Y(SOUTBUF)	
61	62	001342 0190			4104	=Y(400)	
63	64	001344 000A			4105	=Y(TCTBUFER-TCTDSECT)	
65	66	001346 0001			4106	=Y(1)	
67	68	001348 0010			4107	=H'16'	
69	70	00134A 0D46			4108	=Y(CDUMY)	
71	72	00134C 0008			4109	=Y(CDUMCT)	
73	74	00134E 0006			4110	=AL2(CDUMEND-CDUMSTET)	
75	76	001350 00BC			4111	=Y(SCONCOR+4)	
77	78	001352 0005			4112	=Y(BUFDATA-BUFDSECT)	
79	80	001354 0002			4113	=H'2'	
81	82	001356 000B			4114	=H'11'	
83	84	001358 A0			4115	=H'A0'	
85	86	00135A			4116	\$END DS OH	
87	88						
89	90						
91	92						
93	94						
95	96						
97	98						
99	100						



LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	F15OCT70	11/21/72
001361				4136	ORG ** (BUFSTART-BUFBEGIN) ORG AFTER BUF CMTL INFO	F8808000	
001362	135C			4137	PS1STBUF SACON \$1STBUF	F8810000	
001363	00000000			4138	PS1STBUF DC Y (\$1STBUF)		
001364	0136			4139	BUFLN1 DC OH'0', AL2 (BUFEND-BUFBEGIN)	F8812000	
001365	0330			4140	BUFLN2 DC OH'0', AL2 (2* (BUFEND-BUFBEGIN))	F8814000	
001366	00000000			4141	BUFZEROS DC F'0'	F8816000	
001367	12FF			4142	BCOREND DC OH'0', AL2 (1024*CHICORE-1)	F8818000	
001368	0001			4143	BCOREND DC OH'0', AL2 (1024*8-1)	F8820000	
001369	0008			4144	RONE DC H'1'	F8822000	
001370				4145	BNUMBUFS DC H'8'	F8824000	
001371				4146	IBLDBUFS NULL		
001372				4147	SLOAD R11, PS1STBUF	F8826000	
001373	4890 1362			4148	LH R11, PS1STBUF		
001374	4890 1362			4149	LH R10, PS1STBUF	F8828000	
001375	4890 1370			4150	LH R9, RNUMBUFS	F8830000	
001376				4151	BULDHORE NULL	F8832000	
001377				4152	BULDHORE DS		
001378	4890 1366			4153	AH R10, BUFLN2	F8834000	
001379				4154	SCA R10, BSCOREND	F8836000	
001380	4910 136C			4155	CH R10, BSCOREND	F8838000	
001381	4720 13A8			4156	BH BUFSDONE	F8840000	
001382	4B90 136E			4157	SH R9, RONE	F8842000	
001383	4780 13A8			4158	BZ BUFSDONE	F8844000	
001384	48A0 1364			4159	SH R10, BUFLN1	F8846000	
001385	40A0 B000			4160	SSTO R10, (0, R11)		
001386	D202 B002	1368	00002	4161	SH R10, (0, R11)	F8848000	
001387				4162	HVC L'BUFCCHAIN (BUFSTART-BUFCOUNT), R11, BUFZEROS	F8850000	
001388				4163	INITIAL VALUES	F8852000	
001389	4890 8000			4164	LH R11, (0, R11)	F8854000	
001390	47F0 137E			4165	B BULDHORE	F8856000	
001391				4166	BUFSDONE NULL		
001392				4167	BUFSDONE DS		
001393	48A0 1368			4168	SLOAD R10, BUFZEROS	F8858000	
001394				4169	LH R10, BUFZEROS		
001395	40A0 B000			4170	SSTO R10, (0, R11)	F8860000	
001396	D202 B002	1368	00002	4171	SH R10, (0, R11)	F8862000	
001397				4172	HVC L'BUFCCHAIN (BUFSTART-BUFCOUNT), R11, BUFZEROS	F8864000	
001398				4173	INITIAL VALUES	F8866000	
001399				4174	ATP (SHORE EQ 0), L'HORB	F8872000	
001400				4175	ANOP		



LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
0013B6	9500 024A	0024A		4177	\$DCHAIN \$BUFFPOOL,R13,NOENB GET A BUFFER	F150CT70 11/21/72
0013B8	4780 13C8			4178+	CLI \$BUFFPOOL,0	F8876000
0013BE	4850 024A	0024A		4179+	BE **14	
0013C2	D201 024A	D000 0024A	00000	4180+	LH R13,\$BUFFPOOL	
000000				4181+	HVC \$BUFFPOOL(2),0(R13)	
0013C8	D25A D002	1414 00002	01414	4182	USING BUFDSSECT,R13 *	
0013CE	4080 00C0			4183	HVC BUFDSSECT,R13	F8878000
0013D2	4880 1470			4184	\$CHAIN SOUTBUF,R13,NOENB STAGE FOR WRITE	F88B0000
0013D6	9500 8000			4185+	STH R8,\$CHNTMP	F8882000
0013DA	4780 13E6			4186+	LH R8,=Y(\$SOUTBUF)	
0013DE	4880 8000			4187+	CLI 0(R8),0	
0013E2	47F0 13F6			4188+	BE **12	
0013E6	40D0 8000			4189+	LH R8,0(0,R8)	
0013EA	D201 D000	1472 00000	01472	4190+	B **12	
0013F0	4880 00C0			4191+	STH R13,0(0,R8)	
0013F4	9500 024A	0024A		4192+	HVC 0(2,R13),=H'0'	
0013F8	4780 1406			4193+	LH R8,\$CHNTMP	
0013FC	48D0 024A			4194	\$DCHAIN \$BUFFPOOL,R13,NOENB GET ANOTHER	F8884000
001400	D201 024A	D000 0024A	00000	4195+	CLI \$BUFFPOOL,0	
001406	40D0 0EC6			4196+	BE **14	
00140A	D201 D005	0BEA 00005	00000	4197+	LH R13,\$BUFFPOOL	
001410	47F0 0ABC			4198+	HVC \$BUFFPOOL(2),0(R13)	
001414				4199	\$STO R13,\$BUFFER	SET FOR I/O ROUTINES
001416	0058			4200+	STH R13,\$BUFFER	FAKE AN ACK
001417	1002			4201	HVC BUFSTART,XACKSEQ	FAKE AN INTERRUPT
001419	A0			4202	B \$ENDREAO	CONTROL INFO FOR BUFFER
00141A	0000			4203	DS OH	BUFSTAT
00141C	F0			4204	DC AL2(ICTLE,**3)	BUFSTART
00141D	C1			4205	DC X'00'	PCS
00141E				4206	DC AL1(X'80'+BCBRESET)	GENERAL CONTROL TYPE RCB
00141F	615CE2C9C7D5D6D5			4207	DC C'4'	SIGN-ON ID
001420				4208	DC C'4'	REMOTE*
001421				4209	DC C'4'	REMOTE IDENTIFICATION
001422				4210	DC C'4'	REMOTE IDENTIFICATION
001423				4211	DS CL21'/*SIGNON	EOB
001424				4212	DC CL59'EBRTID'	
001425				4213	DC CL59'2' REMOTE IDENTIFICATION	
001426				4214	DC AL1(0)	
001427				4215	DC EQU *	
001428				4216	LTORG	
001429				4217	=Y(\$SOUTBUF)	
001430				4218	=H'0'	

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	ENTRY POINT	11/21/72
001474				4220 \$REPLOAD NULL	OH		F8922000
001474				4221 \$REPLOAD DS	OH		F8922000
001474				4222 ZEP1	NULL *		F8924000
001474				4223 ZEP1	DS	OH	F8924000
001474				4224	ATF (SMACHINE EQ 20).REP20		F8926000
001474				4225 .REP20	ANOF		F8926000
001474				4226	XIO ZPCARD(ROPCODE+1),80 READ REP CARD		F8926000
001474				4227	HVC ZPCARD(ROPCODE+1),80 XIOXIOXIOXIOXIO		F8926000
001474				4228	ORG *-6 XIOXIOXIOXIOXIOXIO		F8926000
001474				4229	DC X'D0' XIOXIOXIOXIOXIOXIO		F8926000
001474				4230	ORG *-5 XIOXIOXIOXIOXIOXIO		F8926000
001474				4231	BC 7,*-6		F8926000
001474				4232 ZEP2	NULL		F8926000
001474				4233 ZEP2	DS	OH	F8926000
001474				4234	TIOB *-RBSY	WAIT	F8926000
001474				4235	DC X'9A'		F8926000
001474				4236	DC AL1(RBSY)		F8926000
001474				4237	DC S(*-2)		F8926000
001474				4238 ZEP3	NULL		F8926000
001474				4239 ZEP3	DS	OH	F8926000
001474				4240	TIOB ZEP1,REORR	ERROR	F8926000
001474				4241	DC X'9A'		F8926000
001474				4242	DC AL1(REORR)		F8926000
001474				4243	DC S(ZEP1)		F8926000
001474				4244 ZEP4	NULL		F8926000
001474				4245 ZEP4	DS	OH	F8926000
001474				4246	TIOB ZEPEND,REOF	EOF	F8926000
001474				4247	DC X'9A'		F8926000
001474				4248	DC AL1(REOF)		F8926000
001474				4249	DC S(ZEPEND)		F8926000
001474				4250	XIO ZPCARD(ROPCODE+1),80 PRINT REP CARD		F8926000
001474				4251	HVC ZPCARD(ROPCODE+1),80 XIOXIOXIOXIOXIO		F8926000
001474				4252	ORG *-6 XIOXIOXIOXIOXIOXIO		F8926000
001474				4253	DC X'D0' XIOXIOXIOXIOXIOXIO		F8926000
001474				4254	ORG *-5 XIOXIOXIOXIOXIOXIO		F8926000
001474				4255	BC 7,*-6		F8926000
001474				4256	AGO .REP20A	WAIT UNTIL TA-EN	F8926000
001474				4257 .REP20A	ANOF		F8926000
001474				4258	CLC ZPCARD(4),=C'	' IS THIS BLANK	F8926000
001474				4259	BE ZEPEND	OR IF YES TO END OF REPS	F8926000
001474				4260	CLC ZPCARD(8),XCTY	' IS THIS SIGNON CARD	F8926000
001474				4261	BE ZEPEDA	IF SO HOVE SIGNON	F8926000
001474				4262	CLC ZPCARD+1(3),=C'REP'	' IS THIS REP	F8926000
001474				4263	BNE ZEP1	OR IF NO... TO READ ADDR	F8926000
001474				4264	CLC ZPCARD+8(4),=C'	' IS LOC FIELD BLANK...	F8926000
001474				4265	LH R8,=Y(ZPCARD+16)	LOAD ADDR OF DATA	F8926000
001474				4266	BE Z1	OR IF BLANK TO CONT. OLD LOC	F8926000
001474				4267	LH R9,=Y(ZPCARD+8)	ADDR OF LOC FIELD	F8926000
001474				4268	BAS R9,ZTRAN	GO DECODE	F8926000
001474				4269	DC X'D0'		F8926000
001474				4270	DC AL1(R9+16)		F8926000
001474				4271	DC S(ZTRAN)		F8926000
001474				4272	STH R10,ZWK+1	SIMULATE	F8926000
001474				4273	LH R11,ZWK+1	LR 11,10	F8926000
001474				4274	LH R9,=Y(ZPCARD+16)	FIRST DATA WORD	F8926000

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	GO DECODE	
0014D4	4D	00000	0182C	4275 Z1	BAS R9 ZTRAN		F9020000
0014D5	90	00000	0182C	4276 Z1	DS OH		
0014D6	10PA	00000	0182C	4277+	DC X'4D'		
0014D8	40A0 8000	00000	0182C	4278+	DC AL1(P9=16)		
0014DC	4A30 182C	00000	0182C	4279+	DC S(ZTRAN)		
0014E0	9569 8004	00000	0182C	4280	STH R10,0(0,R11)	AND STORE	F9022000
0014E4	4770 147A	00000	0182C	4281	AH R11,=H'2'	BUHP LOC CTR	F9024000
0014E8	4A80 182E	00000	0182C	4282	CLI 4(R8),C'	IS THERE MORE	F9026000
0014EC	47F0 14D4	00000	0182C	4283	BNE ZEP1	BR IF NO TO NEXT CARD	F9028000
0014F0	D24P 141E 151D 0141E 0151D	00000	0182C	4284	AH R8,=H'5'	UP CARD POINTER	F9030000
0014F6	47F0 15A6	00000	0182C	4285	B Z1	AND GO AGAIN	F9032000
0014F6	47F0 15A6	00000	0182C	4286 ZEPEND	HVC ICTXT,ZEPCARD	MOVE SIGNON INTO DEFAULT	F9034000
0014F6	47F0 15A6	00000	0182C	4287 ZEPEND	NULL *	END OF REP CARDS	F9036000
0014F6	47F0 15A6	00000	0182C	4288 ZEPEND	DS OH		
0014F6	47F0 15A6	00000	0182C	4289	B \$INITI8	GO TO INITIALIZATION	F9038000
0014F6	47F0 15A6	00000	0182C	4290 *			F9040000
0014F6	47F0 15A6	00000	0182C	4291 *	ZTRAN - CONVERT EBCDIC HEX TO BINARY		F9042000
0014F6	47F0 15A6	00000	0182C	4292 *	R8= START OF FIELD ,R9=LINK REG , R10 =BINARY RESULTS		F9044000
0014F6	47F0 15A6	00000	0182C	4293 *			F9046000
0014FA	D203 1519 8000 01519 00000	00000	0182C	4294 ZTRAN	NULL		F9048000
0014FA	D203 1519 8000 01519 00000	00000	0182C	4295 ZTRAN	DS OH		
001500	DC03 1519 14AC 01519 014AC	00000	0182C	4296	HVC ZWK(4),0(R8)	MOVE DATA	F9050000
001506	F233 1519 1519 01519 01519	00000	0182C	4297	TR ZWK(4),ZTAB	TRANSLATE A LITTLE	F9052000
00150C	F133 1519 1519 01519 01519	00000	0182C	4298	PACK ZWK(4),ZWK(4)	PACK IT UP	F9054000
001512	48A0 151A	00000	0182C	4299	HVO ZWK(4),ZWK(4)	SHIFT IT	F9056000
001516	07F9	00000	0182C	4300	LH R10,ZWK(4)	LOAD RESULT--- INTO REG	F9058000
001518	00	00000	0182C	4301	BR R9	AND RETURN	F9060000
001518	00	00000	0182C	4302	DS OH		F9062000
001518	00	00000	0182C	4303	DC X'00'		F9064000
001519	000000	00000	0182C	4304 ZWK	DC AL3(0)		F9066000
00151C	00	00000	0182C	4305	DC X'00'	SPACER	F9068000
00151D	00	00000	0182C	4306 ZEPEND	DS 80C		F9070000
00151D	00	00000	0182C	4307 ZTAB	EQU *-I,C1'		F9072000
00156D	0A0B0C0D0E0P	00000	0182C	4308	DC X'0A0B0C0D0E0P'		F9074000
00157F	0000000000000000	00000	0182C	4309	DC X'P0'-X'CS'Y'X'00'		F9076000
00159D	0102030405060708	00000	0182C	4310	DC X'010203040506070809'		F9078000
00159D	0102030405060708	00000	0182C	4311	AIP (MACHINE EQ 20).REP360C		F9080000
00159D	0102030405060708	00000	0182C	4312 .REP360C ANOP			F9086000



LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
0015F0	D207 17B0 1788 017B8			4365	AIP (SMACHINE EQ 20).INIT3	F9182000
0015F6	4BA0 1832			4366	AIP (SMACHINE NE 20).INIT4	F9186000
0015FA	4740 1608			4367	NVC INICVD,INIPZERO	F9188000
0015FE	F170 1780 17C0 017B0			4368	NVC PACKED ZERO	F9190000
001604	47F0 15F6			4369	INCVDLOP NULL	
001608				4370	OH R10,=H'1'	
00160E	F367 17A4 1780 017A4			4371	SH SUBTRACT ONE	F9192000
001612				4372	BM BR NEGATIVE TO EDIT	F9194000
001616	4770 1626			4373	AP INICVD,INIPONE	F9196000
00161A	9240 A000			4374	B INCVDLOP	F9198000
00161E	4A40 1832			4375	ANOP LOOP	F9200000
001622	47F0 1612			4376	INCVDONE NULL	F9202000
001626	96F0 17AA			4377	DS OH	
001630				4378	UNPK INIERCNT,INICVD	F9204000
001634	4A90 1836			4379	SLA R10,INIERCNT	F9206000
001638	47F0 15D2			4380	LH R10,=(INIERCNT)	
001642				4381	INIEDIT	F9208000
001646				4382	NULL	F9210000
001650				4383	DS OH	
001654				4384	CLI O(P10),C'0'	F9212000
001658				4385	BNE INIWRITE	F9214000
001662				4386	HVI O(R10),C' '	F9216000
001666				4387	AH R10,=H'1'	F9218000
001670				4388	B INIEDIT	F9220000
001674				4389	INIWRITE NULL	F9222000
001678				4390	DS OH	
001682				4391	OI INIERCNT+6,X'F0'	F9224000
001686				4392	AIP (SMACHINE EQ 20).INIT5	F9226000
001690				4393	AIP (SMACHINE NE 20).INIT6	F9228000
001694				4394	XIO INIBUFF(POPCODE+1),L'LOGTEXT+37	F9230000
001698				4395	NVC INIBUFF(POPCODE+1),L'LOGTEXT+37	F9232000
001702				4396	ORG *-6 XIOXIOXIOXIOXIO	F9234000
001706				4397	DC X'D0' XIOXIOXIOXIOXIO	
001710				4398	ORG *-5 XIOXIOXIOXIOXIO	
001714				4399	BC 7, *-6	
001718				4400	ANOP BR UNTIL EXCEPTED	F9236000
001722				4401	AH R9,=Y(LOGEND-LOGID)	F9238000
001726				4402	B INPTOUT	F9240000
001730				4403	INPTOUT BR TO PROCESS THE NEXT ENTRY	F9242000
001734				4404	INPTOUT	
001738				4405	INPTOUT	
001742				4406	INPTOUT	
001746				4407	LOGTABL DS	
001750				4408	LOGTABL DS	
001754				4409	LOGTABL DS	
001758				4410	LOGTABL DS	
001762				4411	LOGTABL DS	
001766				4412	LOGTABL DS	
001770				4413	LOGTABL DS	
001774				4414	LOGTABL DS	
001778				4415	LOGTABL DS	
001782				4416	LOGTABL DS	
001786				4417	LOGTABL DS	
001790				4418	LOGTABL DS	
001794				4419	LOGTABL DS	
001798				4420	LOGTABL DS	
001802				4421	LOGTABL DS	
001806				4422	LOGTABL DS	
001810				4423	LOGTABL DS	
001814				4424	LOGTABL DS	
001818				4425	LOGTABL DS	
001822				4426	LOGTABL DS	
001826				4427	LOGTABL DS	
001830				4428	LOGTABL DS	
001834				4429	LOGTABL DS	
001838				4430	LOGTABL DS	
001842				4431	LOGTABL DS	
001846				4432	LOGTABL DS	
001850				4433	LOGTABL DS	
001854				4434	LOGTABL DS	
001858				4435	LOGTABL DS	
001862				4436	LOGTABL DS	
001866				4437	LOGTABL DS	
001870				4438	LOGTABL DS	
001874				4439	LOGTABL DS	
001878				4440	LOGTABL DS	
001882				4441	LOGTABL DS	
001886				4442	LOGTABL DS	
001890				4443	LOGTABL DS	
001894				4444	LOGTABL DS	
001898				4445	LOGTABL DS	
001902				4446	LOGTABL DS	
001906				4447	LOGTABL DS	
001910				4448	LOGTABL DS	
001914				4449	LOGTABL DS	
001918				4450	LOGTABL DS	
001922				4451	LOGTABL DS	
001926				4452	LOGTABL DS	
001930				4453	LOGTABL DS	
001934				4454	LOGTABL DS	
001938				4455	LOGTABL DS	
001942				4456	LOGTABL DS	
001946				4457	LOGTABL DS	
001950				4458	LOGTABL DS	
001954				4459	LOGTABL DS	
001958				4460	LOGTABL DS	
001962				4461	LOGTABL DS	
001966				4462	LOGTABL DS	
001970				4463	LOGTABL DS	
001974				4464	LOGTABL DS	
001978				4465	LOGTABL DS	
001982				4466	LOGTABL DS	
001986				4467	LOGTABL DS	
001990				4468	LOGTABL DS	
001994				4469	LOGTABL DS	
001998				4470	LOGTABL DS	
002002				4471	LOGTABL DS	
002006				4472	LOGTABL DS	
002010				4473	LOGTABL DS	
002014				4474	LOGTABL DS	
002018				4475	LOGTABL DS	
002022				4476	LOGTABL DS	
002026				4477	LOGTABL DS	
002030				4478	LOGTABL DS	
002034				4479	LOGTABL DS	
002038				4480	LOGTABL DS	
002042				4481	LOGTABL DS	
002046				4482	LOGTABL DS	
002050				4483	LOGTABL DS	
002054				4484	LOGTABL DS	
002058				4485	LOGTABL DS	
002062				4486	LOGTABL DS	
002066				4487	LOGTABL DS	
002070				4488	LOGTABL DS	
002074				4489	LOGTABL DS	
002078				4490	LOGTABL DS	
002082				4491	LOGTABL DS	
002086				4492	LOGTABL DS	
002090				4493	LOGTABL DS	
002094				4494	LOGTABL DS	
002098				4495	LOGTABL DS	
002102				4496	LOGTABL DS	
002106				4497	LOGTABL DS	
002110				4498	LOGTABL DS	
002114				4499	LOGTABL DS	
002118				4500	LOGTABL DS	
002122				4501	LOGTABL DS	
002126				4502	LOGTABL DS	
002130				4503	LOGTABL DS	
002134				4504	LOGTABL DS	
002138				4505	LOGTABL DS	
002142				4506	LOGTABL DS	
002146				4507	LOGTABL DS	
002150				4508	LOGTABL DS	
002154				4509	LOGTABL DS	
002158				4510	LOGTABL DS	
002162				4511	LOGTABL DS	
002166				4512	LOGTABL DS	
002170				4513	LOGTABL DS	
002174				4514	LOGTABL DS	
002178				4515	LOGTABL DS	
002182				4516	LOGTABL DS	
002186				4517	LOGTABL DS	
002190				4518	LOGTABL DS	
002194				4519	LOGTABL DS	
002198				4520	LOGTABL DS	
002202				4521	LOGTABL DS	
002206				4522	LOGTABL DS	
002210				4523	LOGTABL DS	
002214				4524	LOGTABL DS	
002218				4525	LOGTABL DS	
002222				4526	LOGTABL DS	
002226				4527	LOGTABL DS	
002230				4528	LOGTABL DS	
002234				4529	LOGTABL DS	
002238				4530	LOGTABL DS	
002242				4531	LOGTABL DS	
002246				4532	LOGTABL DS	
002250				4533	LOGTABL DS	
002254				4534	LOGTABL DS	
002258				4535	LOGTABL DS	
002262				4536	LOGTABL DS	
002266				4537	LOGTABL DS	
002270				4538	LOGTABL DS	
002274				4539	LOGTABL DS	
002278				4540	LOGTABL DS	
002282				4541	LOGTABL DS	
002286				4542	LOGTABL DS	
002290				4543	LOGTABL DS	
002294				4544	LOGTABL DS	
002298				4545	LOGTABL DS	
002302				4546	LOGTABL DS	
002306				4547	LOGTABL DS	
002310				4548	LOGTABL DS	
002314				4549	LOGTABL DS	
002318				4550	LOGTABL DS	
002322				4551	LOGTABL DS	
002326				4552	LOGTABL DS	
002330				4553	LOGTABL DS	
002334				4554	LOGTABL DS	
002338				4555	LOGTABL DS	
002342				4556	LOGTABL DS	
002346				4557	LOGTABL DS	
002350				4558	LOGTABL DS	
002354				4559	LOGTABL DS	
002358				4560	LOGTABL DS	
002362				4561	LOGTABL DS	
002366				4562	LOGTABL DS	
002370				4563	LOGTABL DS	
002374				4564	LOGTABL DS	
002378				4565	LOGTABL DS	
002382				4566	LOGTABL DS	
002386				4567	LOGTABL DS	
002390				4568	LOGTABL DS	
002394				4569	LOGTABL DS	
002398				4570	LOGTABL DS	
002402				4571	LOGTABL DS	
002406				4572	LOGTABL DS	
002410				4573	LOGTABL DS	
002414				4574	LOGTABL DS	
002418				4575	LOGTABL DS	
002422				4576	LOGTABL DS	
002426				4577	LOGTABL DS	
002430				4578	LOGTABL DS	
002434				4579	LOGTABL DS	
002438				4580	LOGTABL DS	
002442				4581	LOGTABL DS	
002446				4582	LOGTABL DS	
002450				4583	LOGTABL DS	
002454				4584	LOGTABL DS	
002458				4585	LOGTABL DS	
002462				4586	LOGTABL DS	
002466				4587	LOGTABL DS	
002470				4588	LOGTABL DS	
002474				4589	LOGTABL DS	
002478				4590	LOGTABL DS	
002482				4591	LOGTABL DS	
002486				4592	LOGTABL DS	
002490				4593	LOGTABL DS	

ICC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	
001656 02				4418+	DC AL1(XNARREC)	
001657 07				4419+	DC AL1(7)	
001658 0000				4420+	DC H'0'	
00165A C5D9D9D6D940D9C5				4421+	DC CL(L'LOGTEXT)'ERROR REPLY'	
000003				4422	SLOGENT ID=XNRRRS,CLASS=10,TEXT=INVALID RESP'	P9258000
001666				4423+XNRRRS EQU 3		
001666 03				4424+	DS OH	
001667 0A				4425+	DC AL1(XNRRRS)	
001668 0000				4426+	DC AL1(10)	
00166A C9D5E5C1D3C9C440				4427+	DC H'0'	
000004				4428+	DC CL(L'LOGTEXT)'INVALID RESP'	
001676				4429	SLOGENT ID=XUNITEXP,CLASS=10,TEXT=UNIT EXCPN'	P9260000
001676 04				4430+XUNITEXP EQU 4		
001677 0A				4431+	DS OH	
001678 0000				4432+	DC AL1(XUNITEXP)	
00167A E4D5C9E340C5E7C3				4433+	DC AL1(10)	
000005				4434+	DC H'0'	
001686				4435+	DC CL(L'LOGTEXT)'UNIT EXCPN'	
001687 07				4436	SLOGENT ID=XUNITCHK,CLASS=7,TEXT=UNIT CHECK'	P9262000
001688 0000				4437+XUNITCHK EQU 5		
00168A E4D5C9E340C3C8C5				4438+	DS OH	
000006				4439+	DC AL1(XUNITCHK)	
001696				4440+	DC AL1(7)	
001697 0F				4441+	DC H'0'	
001698 0000				4442+	DC CL(L'LOGTEXT)'UNIT CHECK'	
00169A E4D5E4E2E4C1D340				4443	SLOGENT ID=XUNSLERR,CLASS=15,TEXT=UNUSUAL END'	P9264000
000007				4444+XUNSLERR EQU 6		
0016A6				4445+	DS OH	
0016A6 07				4446+	DC AL1(XUNSLERR)	
0016A7 0C				4447+	DC AL1(15)	
0016A8 0000				4448+	DC H'0'	
00169A E4D5E4E2E4C1D340				4449+	DC CL(L'LOGTEXT)'UNUSUAL END'	
000007				4450	SLOGENT ID=XSI0BAD,CLASS=12,TEXT=SIO FAILURE'	P9266000
0016A6				4451+XSI0BAD EQU 7		
0016A6 07				4452+	DS OH	
0016A7 0C				4453+	DC AL1(XSI0BAD)	
0016A8 0000				4454+	DC AL1(12)	
0016AA E2C9D6A0C6C1C9D3				4455+	DC H'0'	
000008				4456+	DC CL(L'LOGTEXT)'SIO FAILURE'	
0016B6				4457	SLOGENT ID=XTPWRITE,CLASS=1,TEXT=LOG OF WRITES	P9268000
0016B6 08				4458+XTPWRITE EQU 8		
0016B7 01				4459+	DS OH	
0016B8 0000				4460+	DC AL1(XTPWRITE)	
0016BA E6404080408080				4461+	DC AL1(1)	
000009				4462+	DC H'0'	
0016C6				4463+	DC CL(L'LOGTEXT)'H'	
0016C6 09				4464	SLOGENT ID=XTPREAD,CLASS=1,TEXT=LOG FOR ALL READS	P9270000
0016C7 01				4465+XTPREAD EQU 9		
0016C8 0000				4466+	DS OH	
0016CA D940F0D0F0F0F0F0				4467+	DC AL1(XTPREAD)	
0016D7				4468+	DC AL1(1)	
0016D7 00				4469+	DC H'0'	
0016D7				4470+	DC CL(L'LOGTEXT)'H'	
0016D7				4471	DC X'00'	
0016D7				4472 ILTABEND DS	OC	
					END OF LOG TABLE	P9272000
					END OF THE TABLE	P9274000

LCC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	F150CT70	11/21/72
				4473	ATP (6MACHINE EQ 20).INI7	F9276000	
				4474	INIT7	F9332000	
0016D7	4040404040404040			4475	INITIAL DC 45C' ,C'HASP ENVIRONMENT RECORDING ERROR PRINTOUT'	F9334000	
00172D	4040404040404040			4476	INITIAL DC 20C' ,C'ERROR ID',14C' ,	F9336000	
001757	C356D4EHD3C1E3C9			4477	DC C'CONULATIVE COUNT SINCE THE LAST IPL'	F9338000	
00177A	4040404040404040			4478	INITIAL DC 0CL(L'LOGTEXT',37)	F9340000	
00178E	4040404040404040			4479	INITIAL DC 20C' ,	F9342000	
00179A	4040404040404040			4480	INITIAL DC CL(L'LOGTEXT)' ,	F9344000	
0017A4	F0F0F0F0F0F0F0			4481	DC 10C' ,	F9346000	
0017AB	0000000000000000			4482	INTERCNT DC C'00000000'	F9348000	
0017B0	0000000000000000			4483	INICVD DC 0D'0',PL8'0'	F9350000	
0017B8	0000000000000000			4484	INIPZERO DC PL8'0'	F9352000	
0017C0	1C			4485	INIPONE DC P'1'	F9354000	

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	PSW
0017C2				4488 INCONTIN NULL 4489 INCONTIN DS 4490 AIF 4491 INHOD20 ANOP 4492 CIO 4493 DC 4494 DC 4495 DC 4496 BC 4497 SLOAD R12, Y (\$SVC) 4498 LH R12, Y (\$SVC) 4499 AIF (\$CONSOLE EQ 0).INHOD20A 4500 INHOD20A AIF (\$R(2)).INHOD20B 4501 INHOD20B ANOP 4502 AIF (\$HOME EQ 0).INHONIA 4503 INHONIA ANOP 4504 CIO 4505 DC 4506 DC 4507 DC 4508 IREDOIT HVC 4509 IAGAIN NULL 4510 IAGAIN DS 4511 XIO 4512 HVC 4513 ORG 4514 DC 4515 ORG 4516 BC 4517 \$SSH 4518 DC 4519 ORG 4520 DC 4521 ORG 4522 DC 4523 DC 4524 B 4525 INTFAKE DC 4526 INITINT NULL 4527 INITINT DS 4528 CLF 4529 BNE 4530 TIOB 4531 DC 4532 DC 4533 DC 4534 DC 4535 CLC 4536 BNE 4537 DS 4538 B 4539 IWRDRES DC 4540 IRPADRES DC 4541 IBACK NULL 4542 IBACK DS	OH (MACHINE EQ 20).INHOD20 1, X'45' X'9B' AL1(X'45') S(1) 7, *-4 WAIT UNTIL ACCEPTED ESTABLISH TRACE ENTRY (\$CONSOLE EQ 0).INHOD20A (\$R(2)).INHOD20B (\$HOME EQ 0).INHONIA I, CAENABE X'9B' AL1(CAENABE) S(1) 148 (U), =AL4 (INITINT) SET NEW PSW TRY AGAIN XIO IWRDRES (CAWTRD), 4 SEND PRE-SIGNON, REC DLE ACKO IWRDRES (CAWTRD), 4 XIOXIOXIOXIOXIO *-6 XIOXIOXIOXIOXIOXIO X'DO' XIOXIOXIOXIOXIOXIO *-5 XIOXIOXIOXIOXIOXIO 7, IAGAIN TRY AGAIN IF NOT STARTED PREPARE FOR INTERRUPT AL4 (*+4) SPSPSPSPSPSPSPSPSPSPSPSPSPSPSP *-4 SP X'8100' SP *-2 SP AL2(X'0100') Y (*+2) B INTFAKE DC INITINT NULL INITINT DS CLF BNE TIOB DC DC DC CLC BNE DS B IWRDRES DC IRPADRES DC IBACK NULL IBACK DS	F9360000 F9362000 F9456000 F9458000 F9460000 F9462000 F9464000 F9470000 F9482000 F9484000 F9488000 F9490000 F9492000 F9494000 F9496000 F9498000 F9500000 F9502000 F9504000 F9506000 F9508000 F9510000 F9512000 F9514000 F9516000 F9518000 F9520000 F9522000 F9524000 F9526000 F9528000
0017C2 98				4493+ DC	SKIP TO CHAN V	
0017C3 45				4494+ DC		
0017C4 0001				4495+ DC		
0017C6 4770 17C2				4496+ BC		
0017CA 48C0 1838				4497 SLOAD R12, Y (\$SVC) 4498 LH R12, Y (\$SVC) 4499 AIF (\$CONSOLE EQ 0).INHOD20A 4500 INHOD20A AIF (\$R(2)).INHOD20B 4501 INHOD20B ANOP 4502 AIF (\$HOME EQ 0).INHONIA 4503 INHONIA ANOP 4504 CIO 4505 DC 4506 DC 4507 DC 4508 IREDOIT HVC 4509 IAGAIN NULL 4510 IAGAIN DS 4511 XIO 4512 HVC 4513 ORG 4514 DC 4515 ORG 4516 BC 4517 \$SSH 4518 DC 4519 ORG 4520 DC 4521 ORG 4522 DC 4523 DC 4524 B 4525 INTFAKE DC 4526 INITINT NULL 4527 INITINT DS 4528 CLF 4529 BNE 4530 TIOB 4531 DC 4532 DC 4533 DC 4534 DC 4535 CLC 4536 BNE 4537 DS 4538 B 4539 IWRDRES DC 4540 IRPADRES DC 4541 IBACK NULL 4542 IBACK DS	WAIT UNTIL ACCEPTED ESTABLISH TRACE ENTRY (\$CONSOLE EQ 0).INHOD20A (\$R(2)).INHOD20B (\$HOME EQ 0).INHONIA I, CAENABE X'9B' AL1(CAENABE) S(1) 148 (U), =AL4 (INITINT) SET NEW PSW TRY AGAIN XIO IWRDRES (CAWTRD), 4 SEND PRE-SIGNON, REC DLE ACKO IWRDRES (CAWTRD), 4 XIOXIOXIOXIOXIO *-6 XIOXIOXIOXIOXIOXIO X'DO' XIOXIOXIOXIOXIOXIO *-5 XIOXIOXIOXIOXIOXIO 7, IAGAIN TRY AGAIN IF NOT STARTED PREPARE FOR INTERRUPT AL4 (*+4) SPSPSPSPSPSPSPSPSPSPSPSPSPSPSP *-4 SP X'8100' SP *-2 SP AL2(X'0100') Y (*+2) B INTFAKE DC INITINT NULL INITINT DS CLF BNE TIOB DC DC DC CLC BNE DS B IWRDRES DC IRPADRES DC IBACK NULL IBACK DS	
0017D8				4510+ IAGAIN DS		
0017D8 D250 1816 0004 01816 00004				4511 XIO		
0017D8 D0				4512 HVC		
0017DE 4770 17D8				4513 ORG		
0017E2 000017E6				4514 DC		
0017E2 8100				4515 ORG		
0017E6 0100				4516 BC		
0017E8 17EA				4517 \$SSH		
0017EA 47F0 17EA				4518 DC		
0017EE 01560004000000A85				4519 ORG		
0017F6				4520 DC		
0017FA 4770 181A				4521 ORG		
0017FE 9A				4522 DC		
0017FF 50				4523 DC		
001800 17D8				4524 B		
001802 D501 1813 181A 0181B 0183A				4525 INTFAKE DC		
001808 4770 17D8				4526 INITINT NULL		
00180C D207 0090 17EE 00090 017EE				4527 INITINT DS		
001812 47F0 1372				4528 CLF		
001816 012D				4529 BNE		
001818 0030				4530 TIOB		
00181A				4531 DC		



[illegible]

# HR2 \$ I N I T I 8 -- INITIALIZATION PROCESSOR

PAGE 118

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	PI50CT10 11/21/72
001820				4550	LTORG	
001820	40404040			4551	=C'	P9536000
001824	00001786			4552	=ALB (INITINT)	
001828	152D			4553	=Y (ZEPCARD+16)	
00182A	1525			4554	=Y (ZEPCARD+8)	
00182C	0002			4555	=H'2'	
00182E	0005			4556	=H'5'	
001830	0186			4557	=Y (LOGTABLE)	
001832	0001			4558	=H'1'	
001834	17A4			4559	=Y (INIERCNT)	
001836	0010			4560	=Y (LOGEND-LOGID)	
001838	0FF2			4561	=Y (\$SVC)	
00183A	1070			4562	=AL1 (XDLE, XACK0)	
00183C	D9C5D7			4563	=C'REP'	

LCC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT P150CT70 11/21/72

00183P	4566 SL	EQU	*-HASPRJE*8HRTBORG	V03.1	P9542000
000000	4567 SL1	EQU	*-HASPRJE*128 V03.1		
000000	4568 SL2	EQU	SL/100000*10000		P9544000
001770	4569 SL3	EQU	(SL-SL1)/10000*10000		P9546000
000008	4570 SL4	EQU	(SL-SL1-SL2)/1000*1000		P9548000
000000	4571 SL5	EQU	(SL-SL1-SL2-SL3)/100*100		P9550000
000007	4572 SL6	EQU	(SL-SL1-SL2-SL3-SL4)/10*10		P9552000
			SL-SL1-SL2-SL3-SL4-SL5		P9554000

006207	4578 *		THE FOLLOWING VALUE OF \$DLENGTH INDICATES THE		
	4575 *		MINIMUM MEMORY SIZE TO CONTAIN THIS PROGRAM.		
	4577 *		THE VALUE REPRESENTS THE DECIMAL VALUE		
	4578 *				
	4579 \$DLENGTH EQU		SL1/100000*1049576*SL2/10000*65536+SL3/1000*4096+SL4/100CP9568000		P9566000
			+256*SL5/10*16*SL6		P9570000



UCC OBJECT CODE	A00R1	A00R2	SYMT	SOURCE STATEMENT	P150CT70	11/21/72

```

*****
4632 * EIGHT CHARACTER ERROR MESSAGE CODES *****
4633 *
4634 *
4635 *
4636 *
4637 * 01 = BLOCK COUNT CHECK (DUPLICATE OR LOST RECORDS)
4638 * 011EE00 I1= INPUT BLOCK CHECK FROM HASP
4639 * EE= EXPECTED BLOCK CHECK
4640 *
4641 *
4642 *
4643 * 02 = NEGATIVE ACKNOWLEDGEMENT RECEIVED
4644 * 02000000
4645 *
4646 *
4647 *
4648 * 03 = UNKNOWN RESPONSE RECEIVED
4649 * 0311100 I111= DATA BYTES 1,2 OF INPUT.
4650 * ( IF CORRECT CONTROL SEQUENCE
4651 * ENDING SEQUENCE IS INVALID )
4652 *
4653 *
4654 *
4655 * 04 = UNIT EXCEPTION - EOT RECEIVED
4656 * 0400AAAA AAAA= DEVICE ADDRESS. 0 FOR BSQA
4657 *
4658 *
4659 *
4660 * 05 = UNIT CHECK
4661 * 05SSAAAA SS= SENSE BYTE
4662 * AAAA= DEVICE ADDRESS. 0 FOR BSQA
4663 *
4664 *
4665 *
4666 * 06 = UNUSUAL END
4667 * 06CCAAAA CC= CSW BYTE 5
4668 * AAAA= DEVICE ADDRESS. 0 FOR BSQA
4669 *
4670 *
4671 *
4672 * 07 = SIO FAILURE
4673 * 07000000
4674 *
4675 *
4676 *
4677 * 08 = ADAPTER WRITE LOGGING
4678 * 08000000 000000= BYTES 2,3,4 OF OUTPUT DATA
4679 *
4680 *
4681 *
4682 * 09 = ALL COMMUNICATION ADAPTER INTERRUPTS
4683 * 0911111 I11111= BYTES 2,3,4 OF INPUT DATA
4684 *
4685 *
4686 *
4687 *
*****

```

DOCUMENT CLASS ERS PAGE NO. B-1  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

APPENDIX BTERMINAL IMPLEMENTATION RECOMMENDATIONS

This appendix contains random notes which do not seem to fit elsewhere in the document, recommendations on features and problems to look at.

1. IBM logs all errors on the console, if the console exists, and in an environment table. When the terminal is loaded, the contents of the environment table, if it is still intact, are printed on the terminal.
2. IBM terminals can dynamically change core locations via cards read by the terminal at load time (before the SIGNON or blank card).
3. If a NAK block is transmitted by the terminal as a response and a NAK block is received by the terminal, a problem can occur if the IBM implementation of the error procedure is implemented. The problem occurs if the terminal's NAK block is in response to an EOF block from the central processor. The EOF block will be lost. A better error procedure implementation is to keep track of the fact that a NAK block was transmitted by the terminal and if a NAK block is received from the central processor, to transmit a BCB error block.
4. The standard transmission buffer size {&MLBFSZ} is 400 bytes. The buffer size can be changed if both processors have the same length buffers. The buffer size must be established at assembly time. {HASPGEN parameter}
5. If multiple devices are to be defined on a terminal, the following HASPGEN parameters must be changed according to the configuration &NUMTPRD, &NUMTPPU, and &NUMTPPR. Also a DCT for each additional device must be generated for the central processor.
6. If the terminal is communicating with the central processor via a leased line, the central processor ignores the SIGN-ON card.
7. The number of buffers {&NUMBUF} must correspond to the number of remote device functions plus the number of local device functions. {Punch and print functions must have two buffers each to do double buffering.} {HASPGEN parameters.}

DOCUMENT CLASS ERS PAGE NO. B-2  
PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

8. &NUMRJE and &NUMLINES must be equal to the largest teleprocessing line identification number or the largest remote terminal identification number {HASPGEN parameters}.
9. &NUMTPPR and &NUMTPPU must specify the maximum number of HASP Remote Terminal print-output and punch-output streams that can simultaneously be active. {HASPGEN parameters}
10. The RMTnn parameter must be defined for each HASP Remote Terminal. {HASPGEN parameter}
11. If ASCII code is going to be used, the &USASCII parameter must be set to YES. {HASPGEN parameter}
12. The type of character compression used should be an assembly option for the terminal. Types available are: trailing blank compression; leading, embedded and trailing blank compression; all duplicate character compression.
13. The minimum number of duplicate characters necessary to trigger compression should be an assembly option for the terminal.
14. Transparent or non-transparent communication code should be an assembly option for the terminal.
15. The SRCB {Section 4.2.4} for General Control Records that are defined but not in use are:
  - SSSSSSS = 1000010 - Final terminal SIGN-OFF
  - = 1000011 - Print initialization record
  - = 1000100 - Punch initialization record
  - = 1000101 - Input initialization record
  - = 1000110 - Data set transmission initialization
  - = 1000111 - System configuration status
  - = 1001001 - 1011001 - Reserved
  - = 1011010 - 1111111 - Available for local modification

# CONTROL DATA CORPORATION

DIVISION

DOCUMENT CLASS ERS PAGE NO. C-1  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## APPENDIX C

### EBCDIC CHARACTER ASSIGNMENTS

S/360 Main Storage Bit Positions 0, 1, 2, 3																	
Bit Positions 4, 5, 6, 7		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
	Hex	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE	DS		SP	&	-						{	}	\	0
0001	1	SOH	DC1	SOS						a	j	~		A	J		1
0010	2	STX	DC2	FS	SYN					b	k	s		B	K	• S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4	PF	RES	BYP	PN					d	m	u		D	M	U	4
0101	5	HT	NL	LF	RS					e	n	v		E	N	V	5
0110	6	LC	BS	EOB ETB	UC					f	a	w		F	O	W	6
0111	7	DEL	IL	PRE ESC	EOT					g	p	x		G	P	X	7
1000	8		CAN							h	q	y		H	Q	Y	8
1001	9	RLF	EM						\	i	r	z		I	R	Z	9
1010	A	SMM	CC	SM		\$	!	!	:								
1011	B	VT				.	S	,	#								
1100	C	FF	IFS		DC4	<	*	%	@								
1101	D	CR	IGS	ENQ	NAK	(	)	-	'								
1110	E	SO	IRS	ACK		+	:	>	=								
1111	F	SI	IUS	BEL	SUB	!	~	?	"								

ACKO=X'70'



Duplicate Assignment



DOCUMENT CLASS ERS PAGE NO. D-1  
 PRODUCT NAME HASP MULTI-LEAVING PROTOCOL  
 PRODUCT MODEL NO. \_\_\_\_\_ MACHINE SERIES \_\_\_\_\_

## APPENDIX D

## ASCII CHARACTER ASSIGNMENTS

		S/360 Main Storage Bit Positions 0, 1, 2, 3															
Bit Positions 4, 5, 6, 7		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
	HEX	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE	SP	0	@	P	\	p								
0001	1	SOH	DC1	!	1	A	Q	a	q								
0010	2	STX	DC2	"	2	B	R	b	r								
0011	3	ETX	DC3	#	3	C	S	c	s								
0100	4	EOT	DC4	\$	4	D	T	d	t								
0101	5	ENQ	NAK	%	5	E	U	e	u								
0110	6	ACK	SYN	&	6	F	V	f	v								
0111	7	BEL	ETB	'	7	G	W	g	w								
1000	8	BS	CAN	(	8	H	X	h	x								
1001	9	HT	EM	)	9	I	Y	i	y								
1010	A	LF	SUB	*	:	J	Z	j	z								
1011	B	VT	ESC	+	;	K	[	k	{								
1100	C	FF	FS	,	<	L	\	l									
1101	D	CR	GS	-	=	M	]	m	}								
1110	E	SO	RS	.	>	N	^	n	~								
1111	F	SI	US	/	?	O	_	o	DEL								

ACKD = X'30'

